

=> fil reg

FILE 'REGISTRY' ENTERED AT 12:03:44 ON 22 JAN 2007

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STRUCTURE FILE UPDATES: 21 JAN 2007 HIGHEST RN 917948-20-0

DICTIONARY FILE UPDATES: 21 JAN 2007 HIGHEST RN 917948-20-0

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TSCA INFORMATION NOW CURRENT THROUGH June 30, 2006

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

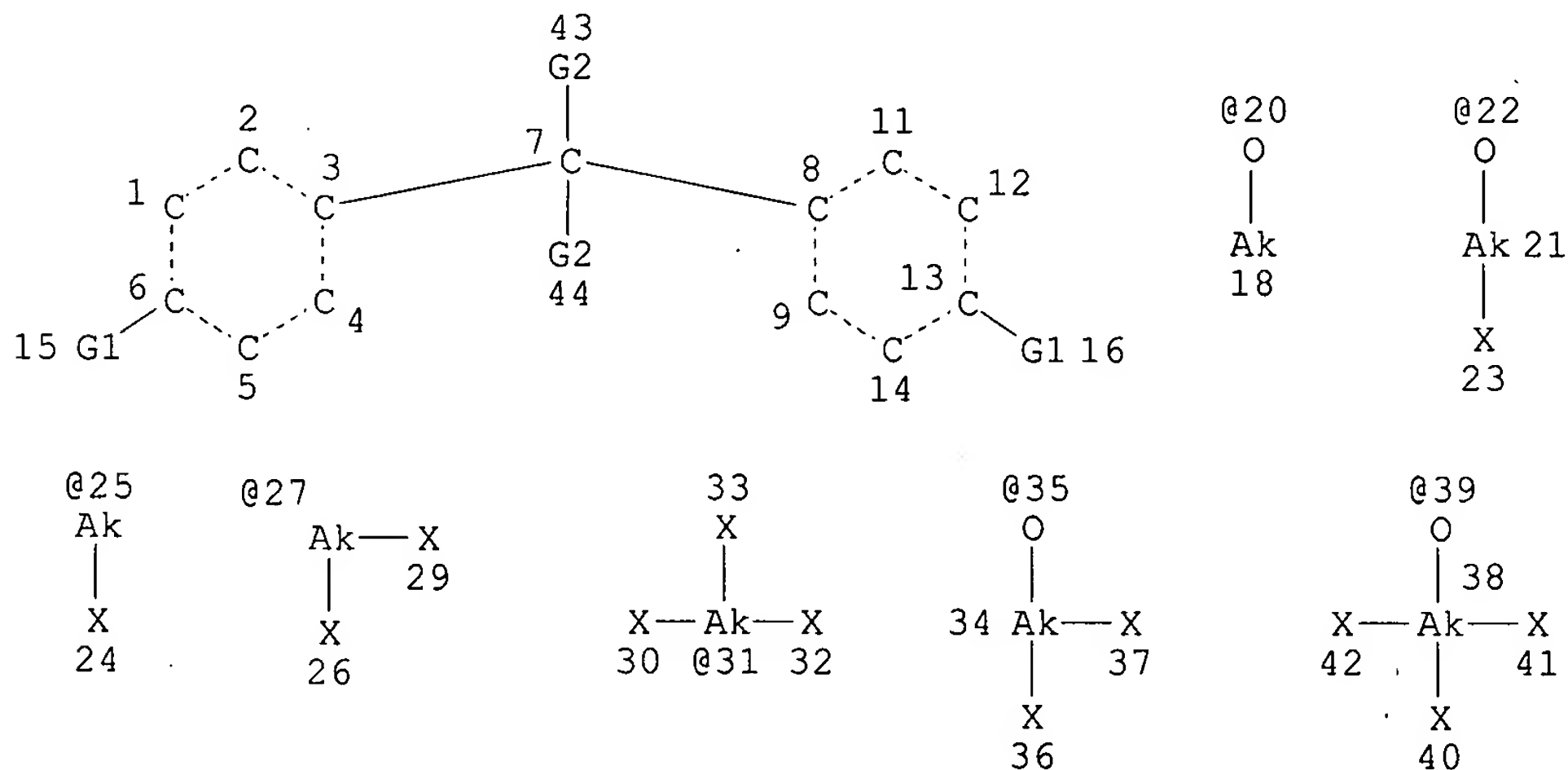
=> d sta que 165

L4 SCR 2039 OR 2050 OR 2049 OR 2053 OR 2052 OR 2051 OR 2043 O

R 2054

L41 SCR 2127

L59 STR



VAR G1=OH/20/AK/22/25/27/31/35/39/X

VAR G2=AK/CB

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 40

STEREO ATTRIBUTES: NONE

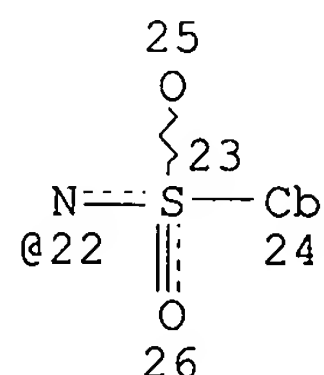
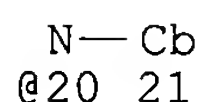
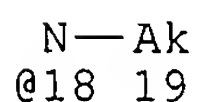
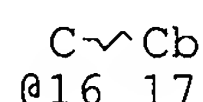
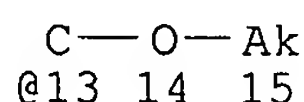
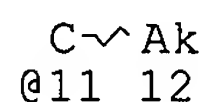
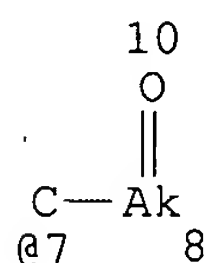
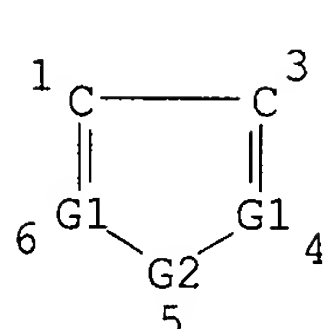
L63 300 SEA FILE=REGISTRY CSS FUL L59 NOT (L4 OR L41)
L65 221 SEA FILE=REGISTRY ABB=ON PLU=ON L63 NOT IDS/CI

=> d sta que 160

L4 SCR 2039 OR 2050 OR 2049 OR 2053 OR 2052 OR 2051 OR 2043 O
R 2054

L9 54 SEA FILE=REGISTRY ABB=ON PLU=ON (463-79-6/BI OR 10377-51-2/BI
OR 105-58-8/BI OR 108-32-7/BI OR 108-88-3/BI OR 117-80-6/BI
OR 1192-62-7/BI OR 1193-79-9/BI OR 126-33-0/BI OR 127-63-9/BI
OR 131651-65-5/BI OR 13243-65-7/BI OR 1330-20-7/BI OR 14024-11-
4/BI OR 14283-07-9/BI OR 162684-16-4/BI OR 16851-82-4/BI OR
18424-17-4/BI OR 1889-59-4/BI OR 21324-40-3/BI OR 271-89-6/BI
OR 27359-10-0/BI OR 28122-14-7/BI OR 28452-93-9/BI OR 29935-35-
1/BI OR 33454-82-9/BI OR 35363-40-7/BI OR 3680-02-2/BI OR
37220-89-6/BI OR 39300-70-4/BI OR 4265-27-4/BI OR 4437-85-8/BI
OR 462-06-6/BI OR 524-42-5/BI OR 5535-43-3/BI OR 5535-48-8/BI
OR 56525-42-9/BI OR 616-38-6/BI OR 620-32-6/BI OR 623-53-0/BI
OR 623-96-1/BI OR 625-86-5/BI OR 67-71-0/BI OR 693-98-1/BI OR
71-43-2/BI OR 7439-93-2/BI OR 7447-41-8/BI OR 7474-83-1/BI OR
77-77-0/BI OR 7791-03-9/BI OR 80-05-7/BI OR 90076-65-6/BI OR
95-15-8/BI OR 96-49-1/BI)

L41 SCR 2127
L47 STR



VAR G1=C/11/13/16/7

VAR G2=O/N/S/18/20/22

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 24

STEREO ATTRIBUTES: NONE

L52 787172 SEA FILE=REGISTRY ABB=ON PLU=ON (16.138.5 OR 16.136.9)/RID
NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13# OR
C14# OR 17O# OR 18O# OR SQL/FA OR (PMS OR IDS OR MXS OR
IDS)/CI)

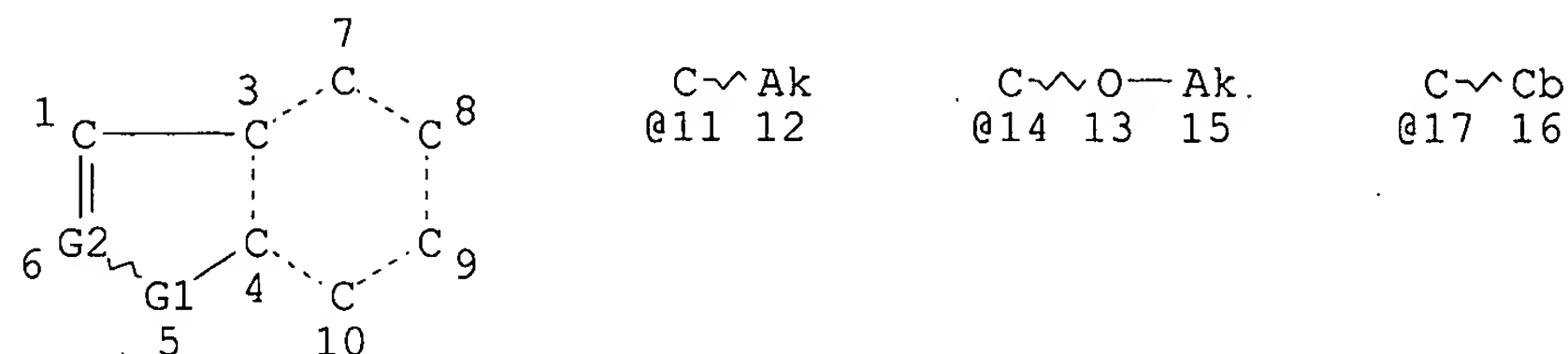
L54 2023 SEA FILE=REGISTRY SUB=L52 CSS FUL L47 NOT (L4 OR L41)

L55 637946 SEA FILE=REGISTRY ABB=ON PLU=ON 16.145.3/RID NOT ((D OR

T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13# OR C14# OR 17O#
 OR 18O# OR SQL/FA OR (PMS OR IDS OR MXS OR IDS)/CI)
 L57 1024 SEA FILE=REGISTRY SUB=L55 CSS FUL L47 NOT (L4 OR L41)
 L58 3047 SEA FILE=REGISTRY ABB=ON PLU=ON (L54 OR L57)
 L60 4 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND L58

=> d sta que 113

L1 STR



VAR G1=O/N/S

VAR G2=C/11/14/17

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE

L5 636929 SEA FILE=REGISTRY ABB=ON PLU=ON (333.151.57 OR 333.246.11 OR
 333.200.32)/RID NOT SQL/FA
 L11 1249 SEA FILE=REGISTRY SUB=L5 CSS FUL L1
 L12 545 SEA FILE=REGISTRY ABB=ON PLU=ON L11 AND NC>=2
 L13 704 SEA FILE=REGISTRY ABB=ON PLU=ON L11 NOT L12

=> d sta que 132

L9 54 SEA FILE=REGISTRY ABB=ON PLU=ON (463-79-6/BI OR 10377-51-2/BI
 OR 105-58-8/BI OR 108-32-7/BI OR 108-88-3/BI OR 117-80-6/BI
 OR 1192-62-7/BI OR 1193-79-9/BI OR 126-33-0/BI OR 127-63-9/BI
 OR 131651-65-5/BI OR 13243-65-7/BI OR 1330-20-7/BI OR 14024-11-
 4/BI OR 14283-07-9/BI OR 162684-16-4/BI OR 16851-82-4/BI OR
 18424-17-4/BI OR 1889-59-4/BI OR 21324-40-3/BI OR 271-89-6/BI
 OR 27359-10-0/BI OR 28122-14-7/BI OR 28452-93-9/BI OR 29935-35-
 1/BI OR 33454-82-9/BI OR 35363-40-7/BI OR 3680-02-2/BI OR
 37220-89-6/BI OR 39300-70-4/BI OR 4265-27-4/BI OR 4437-85-8/BI
 OR 462-06-6/BI OR 524-42-5/BI OR 5535-43-3/BI OR 5535-48-8/BI
 OR 56525-42-9/BI OR 616-38-6/BI OR 620-32-6/BI OR 623-53-0/BI
 OR 623-96-1/BI OR 625-86-5/BI OR 67-71-0/BI OR 693-98-1/BI OR
 71-43-2/BI OR 7439-93-2/BI OR 7447-41-8/BI OR 7474-83-1/BI OR
 77-77-0/BI OR 7791-03-9/BI OR 80-05-7/BI OR 90076-65-6/BI OR
 95-15-8/BI OR 96-49-1/BI)
 L16 4 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND C6-C6/ES
 L23 STR

DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

L38 1852800 SEA FILE=REGISTRY ABB=ON PLU=ON (16.195 OR 16.239 OR
 16.299)/RID
 L41 SCR 2127
 L43 1594677 SEA FILE=REGISTRY ABB=ON PLU=ON L38 NOT (SQL/FA OR (PMS OR
 CCS OR MNS OR IDS)/CI)
 L45 545 SEA FILE=REGISTRY SUB=L43 CSS FUL L33 NOT (L4 OR L41)
 L46 532 SEA FILE=REGISTRY ABB=ON PLU=ON L45 NOT ((D OR T)/ELS OR
 11C# OR 13C# OR 14C# OR C11# OR C13# OR C14# OR 17O# OR 18O#
 OR LABELED OR ION)

=> d his

(FILE 'HOME' ENTERED AT 10:30:35 ON 22 JAN 2007)
 SET COST OFF

FILE 'REGISTRY' ENTERED AT 10:30:41 ON 22 JAN 2007

L1 STR
 L2 50 S L1 SAM
 L3 3 S L1 CSS SAM
 L4 SCR 2039 OR 2050 OR 2049 OR 2053 OR 2052 OR 2051 OR 2043 OR 205
 L5 636929 S (333.151.57 OR 333.246.11 OR 333.200.32)/RID NOT SQL/FA
 L6 0 S L1 CSS SAM SUB=L5
 L7 50 S L1 SAM SUB=L5

FILE 'HCAPLUS' ENTERED AT 10:37:32 ON 22 JAN 2007

L8 1 S US20040185347/PN OR (US2003-658272# OR KR2003-15749)/AP, PRN
 SEL RN

FILE 'REGISTRY' ENTERED AT 10:38:54 ON 22 JAN 2007

L9 54 S E1-E54
 L10 3 S L9 AND L5
 L11 1249 S L1 CSS FUL SUB=L5
 SAV L11 LAURA658C/A
 L12 545 S L11 AND NC>=2
 L13 704 S L11 NOT L12
 L14 STR
 L15 0 S L14 CSS SAM
 L16 4 S L9 AND C6-C6/ES
 L17 STR L14
 L18 0 S L17 CSS SAM
 L19 STR L14
 L20 0 S L19 CSS SAM
 L21 STR L19
 L22 0 S L21 CSS SAM
 L23 STR L21
 L24 1 S L23 CSS SAM
 L25 52177 S (591.49.53 OR 591.49.52)/RID
 L26 17 S L23 CSS SAM SUB=L25
 L27 345 S L23 CSS FUL SUB=L25
 SAV L27 LAURA658D/A
 L28 307 S L27 AND (IDS/CI OR PMS/CI OR NC>=2)

L29 38 S L27 NOT L28
 L30 30 S L29 NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13#
 L31 29 S L30 NOT NAPHTHALENYL
 L32 29 S L16,L31
 L33 STR
 L34 0 S L33 CSS SAM
 L35 1434642 S (NCNC2 OR NCOC2 OR NCSC2)/ES AND 1/NC NOT (SQL/FA OR (MXS OR
 L36 0 S L33 CSS SAM SUB=L35
 L37 1 S L9 AND (NCNC2 OR NCOC2 OR NCSC2)/ES
 L38 1852800 S (16.195 OR 16.239 OR 16.299)/RID
 L39 4 S L33 CSS SAM SUB=L38
 L40 1 S L33 NOT L4 CSS SAM SUB=L38
 L41 SCR 2127
 L42 0 S L33 NOT (L4 OR L41) CSS SAM SUB=L38
 L43 1594677 S L38 NOT (SQL/FA OR (PMS OR CCS OR MNS OR IDS)/CI)
 L44 0 S L33 NOT (L4 OR L41) CSS SAM SUB=L43
 L45 545 S L33 NOT (L4 OR L41) CSS FUL SUB=L43
 SAV L45 LAURA658E/A
 L46 532 S L45 NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13#
 L47 STR
 L48 6 S L9 AND (NC4 OR OC4 OR SC4)/ES
 L49 4 S L48 NOT SC4/ES
 L50 4 S L47 CSS SAM
 L51 1 S L47 NOT (L4 OR L41) CSS SAM
 L52 787172 S (16.138.5 OR 16.136.9)/RID NOT ((D OR T)/ELS OR 11C# OR 13C#
 L53 1 S L47 NOT (L4 OR L41) CSS SAM SUB=L52
 L54 2023 S L47 NOT (L4 OR L41) CSS FUL SUB=L52
 L55 637946 S 16.145.3/RID NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11
 L56 0 S L47 NOT (L4 OR L41) CSS SAM SUB=L55
 L57 1024 S L47 NOT (L4 OR L41) CSS FUL SUB=L55
 L58 3047 S L54,L57
 SAV L58 LAURA658B/A
 L59 STR
 L60 4 S L9 AND L58
 L61 50 S L59 CSS SAM
 L62 1 S L59 NOT (L4 OR L41) CSS SAM
 L63 300 S L59 NOT (L4 OR L41) CSS FUL
 SAV L63 LAURA658A/A
 L64 1 S L9 AND L63
 L65 221 S L63 NOT IDS/CI
 L66 1569 S L63,L65,L49,L60,L10,L13,L32,L37,L46
 SAV L66 LAURA658F/A
 L67 41 S L9 NOT L66
 L68 15 S L67 AND LI/ELS
 L69 12 S L68 NOT TIS/CI
 L70 26 S L67 NOT L68
 L71 11 S L70 AND S/ELS
 L72 15 S L70 NOT L71
 L73 3 S L68 NOT L69

FILE 'HCAPLUS' ENTERED AT 11:28:21 ON 22 JAN 2007

L74 73829 S L66
 L75 500 S L74 AND L69
 L76 3 S L74 AND L73
 L77 500 S L75,L76

FILE 'REGISTRY' ENTERED AT 11:28:59 ON 22 JAN 2007

L78 6 S LI/MF NOT MASS

FILE 'HCAPLUS' ENTERED AT 11:29:04 ON 22 JAN 2007

L79 227 S L78 AND L74
 L80 528 S L77, L79
 E ELECTROLYTE/CT
 L81 3 S E3
 L82 43412 S E18, E23, E26, E27
 L83 165 S E42
 L84 4538 S E45-E49
 E E18+ALL
 L85 82020 S E4, E10, E12, E14, E23, E24
 E BATTERIES/CT
 E E3+ALL
 L86 119729 S E3 OR E2+OLD, NT OR E3+OLD, NT OR E4+OLD, NT OR E5+OLD, NT
 E E4+ALL
 L87 21230 S E7+OLD, NT
 E SECONDARY BATTERIES/CT
 E E3+ALL
 L88 53477 S E7+OLD, NT
 E E28+ALL
 L89 135941 S E3 OR E4+OLD, NT
 L90 115 S L80 AND L81-L89
 L91 46 S L90 AND L72
 L92 2 S L91 AND PY<=2003 NOT P/DT
 L93 28 S L91 AND (PD<=20030313 OR PRD<=20030313 OR AD<=20030313) AND
 L94 30 S L92, L93
 L95 90 S L80 AND L72
 L96 22 S L95 AND PY<=2003 NOT P/DT
 L97 28 S L94 AND (PD<=20030313 OR PRD<=20030313 OR AD<=20030313) AND
 L98 50 S L96, L97
 L99 20 S L98 NOT L94
 E BATTERY/CT
 L100 51101 S E4+OLD, NT OR E5+OLD, NT OR E6+OLD, NT OR E7
 E E9+ALL
 L101 8752 S E2+OLD, NT OR E3+OLD, NT OR E4+OLD, NT
 E E3+ALL
 E E6+ALL
 L102 35302 S E3+NT
 L103 50 S L94, L98
 L104 30 S L103 AND L81-L89, L100-L102
 L105 20 S L103 NOT L104
 L106 3 S L104 AND SAMSUN?/PA, CS
 L107 3 S L104 AND CHEIL?/PA, CS
 E KIM/AU
 L108 45 S E3
 E KIM J/AU
 L109 2657 S E3, E14-E18
 E KIM JIN/AU
 L110 162 S E3
 E KIM JIN H/AU
 L111 134 S E3, E11
 E KIM JINHEE/AU
 L112 86 S E3
 E KIM JIN S/AU
 L113 13 S E3
 L114 218 S E41
 E KIM JINS/AU
 L115 2 S E16
 E KIM NAME/AU
 L116 345 S E4
 E JIN/AU
 L117 1 S E3

| | | |
|------|------|---|
| | | E JIN H/AU |
| L118 | 156 | S E3 |
| L119 | 24 | S E16 |
| | | E KIN HEE/AU |
| | | E JIN HEE/AU |
| | | E JIN SUNG/AU |
| | | E JINHEE/AU |
| | | E JINSUNG/AU |
| | | E JIN NAME/AU |
| L120 | 7 | S E4 |
| | | E HWANG/AU |
| L121 | 2 | S E3 |
| | | E HWANG S/AU |
| L122 | 96 | S E3 |
| L123 | 112 | S E17 |
| | | E HWANG SANG/AU |
| L124 | 1 | S E3 |
| L125 | 17 | S E26 |
| | | E HWANG SANGMOON/AU |
| | | E HWANG NAME/AU |
| L126 | 7 | S E4 |
| | | E SANG/AU |
| L127 | 2 | S E3 |
| | | E SANG M/AU |
| L128 | 14 | S E3 |
| L129 | 1 | S E25 |
| | | E SANGMOON/AU |
| | | E PAIK/AU |
| | | E PAIK M/AU |
| L130 | 5 | S E3, E7 |
| L131 | 7 | S E13, E14 |
| | | E MEEN/AU |
| | | E KIM H/AU |
| L132 | 1207 | S E3 |
| L133 | 1225 | S E39, E40 |
| | | E KIM HAK/AU |
| L134 | 17 | S E3 |
| | | E KIM HAK S/AU |
| L135 | 16 | S E3 |
| L136 | 62 | S E17 |
| | | E KIM HAKSOO/AU |
| L137 | 1 | S E4 |
| | | E HAK/AU |
| | | E HAK S/AU |
| L138 | 3 | S E3 |
| | | E HAKSOO/AU |
| | | E HAK NAME/AU |
| L139 | 1 | S L104 AND L108-L138 |
| L140 | 5 | S L8, L139, L106, L107 |
| L141 | 5 | S L140 AND (BATTERY OR ?ANOD? OR ?CATHOD? OR ?ELECTROLY? OR SOL |
| L142 | 25 | S L104 NOT L141 |
| L143 | 2 | S L71 AND L141 |
| L144 | 1 | S L71 AND L142 |
| L145 | 30 | S L141-L144 |

FILE 'REGISTRY' ENTERED AT 11:46:55 ON 22 JAN 2007

FILE 'HCAPLUS' ENTERED AT 11:46:55 ON 22 JAN 2007

L146 TRA L145 1- RN : 1866 TERMS

FILE 'REGISTRY' ENTERED AT 11:46:56 ON 22 JAN 2007

L147 1866 SEA L146
L148 24 S L147 AND L66
L149 15 S L147 AND L68,L69,L78
L150 15 S L147 AND L72
L151 11 S L147 AND L71
L152 21 S L147 AND LI/ELS NOT L149
L153 24 S L147 AND ?LITHIUM?/CNS NOT L149
L154 24 S L152,L153

FILE 'HCAPLUS' ENTERED AT 11:50:24 ON 22 JAN 2007

L155 12 S L154 AND L145
L156 30 S L149 AND L145
L157 30 S L155,L156
L158 5 S L157 AND L141
SEL RN L158 5

FILE 'REGISTRY' ENTERED AT 11:53:29 ON 22 JAN 2007

L159 74 S E1-E74
L160 73 S L159 NOT L66
L161 66 S L160 NOT L73,L69,L154
L162 62 S L161 NOT L72
L163 61 S L162 NOT L71
L164 5 S L163 AND S/ELS
L165 56 S L163 NOT L164
L166 2 S L165 AND OCOC2/ES
L167 5 S L165 AND OC4/ES
L168 2 S L167 AND (C4H4O OR C5H6O)
L169 3 S L167 NOT L168

FILE 'HCAPLUS' ENTERED AT 11:58:21 ON 22 JAN 2007

L170 150 S L168 AND (L68,L69,L78)
L171 90 S L170 AND PY<=2003 NOT P/DT
L172 43 S L170 AND (PD<=20030313 OR PRD<=20030313 OR AD<=20030313) AND
L173 133 S L171,L172
L174 73 S L173 AND (L72,L169)
L175 51 S L174 AND L81-L89,L100-L102
L176 59 S L173 AND BATTERY
L177 89 S L175,L176,L157,L158
L178 5 S L177 AND (SAMSUN? OR CHEIL?)/PA,CS
L179 1 S L177 AND L108-L138
L180 5 S L178,L179
L181 84 S L177 NOT L180
L182 38 S L181 NOT P/DT
L183 46 S L181 NOT L182
L184 46 S L183 AND L66,L168
L185 46 S L184 AND (L68,L78,L154 OR ?LITHIUM? OR LI)
L186 38 S L184,L185 AND (L72 OR L169 OR L150)
L187 8 S L185 NOT L186
L188 43 S L180,L186

FILE 'REGISTRY' ENTERED AT 12:03:44 ON 22 JAN 2007

=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 12:05:12 ON 22 JAN 2007

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FILE COVERS 1907 - 22 Jan 2007 VOL 146 ISS 5
FILE LAST UPDATED: 21 Jan 2007 (20070121/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l188 bib abs hitstr retable tot

L188 ANSWER 1 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:776339 HCAPLUS

DN 145:252320

TI Nonaqueous **electrolyte** solution for secondary **lithium battery**

IN Jun, Jong Ho; Kim, Hak Su; Kim, Jong Seop; Yang, Ho Seok

PA **Cheil Industries Inc., S. Korea**

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DT **Patent**

LA Korean

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|--------------|
| PI | KR 2004080155 | A | 20040918 | KR 2003-15029 | 20030311 <-- |
| PRAI | KR 2003-15029 | | 20030311 | <-- | |

AB A nonaq. **electrolyte** solution for a secondary **lithium battery** is provided, to improve electrochem. reactivity and stability to overcharge, thereby allowing a **battery** pack to be miniaturized by using no protection circuit or protection device. The **electrolyte** solution comprises 100 weight parts organic **solvent** mixture which consists of a cyclic carbonate-based organic **solvent** and a linear carbonate-based organic **solvent** and contains 0.8-2 M **Li** salt; and 0.1-10.0 weight parts of a halothionaphthene derivative

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 616-38-6, Dimethyl

carbonate 623-53-0, Ethyl methyl carbonate 21324-40-3,

Lithium hexafluorophosphate 35363-40-7, Ethyl propyl

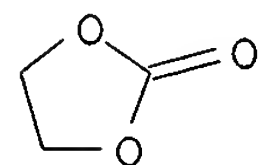
carbonate 56525-42-9, Methyl propyl carbonate

RL: DEV (Device component use); USES (Uses)

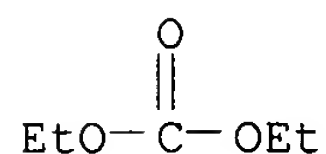
(**electrolyte** solns. containing thionaphthene derivs. for secondary **lithium batteries**)

RN 96-49-1 HCAPLUS

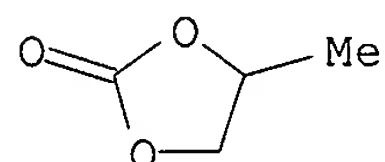
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



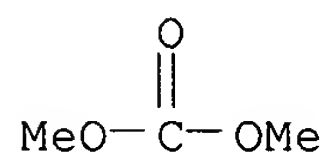
RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



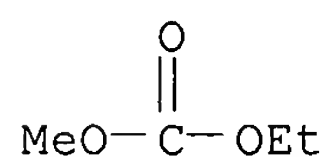
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



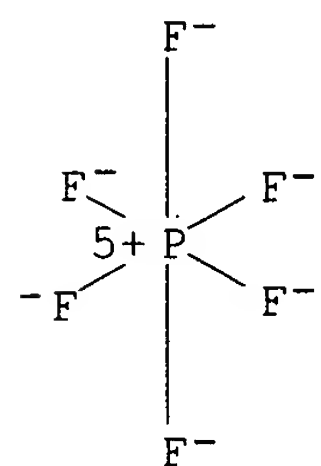
RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

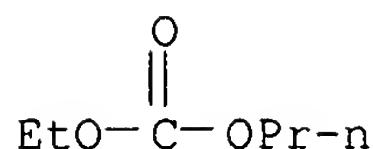


RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

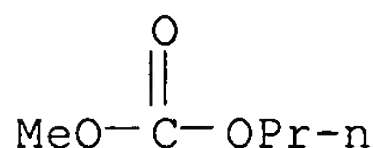


● Li⁺

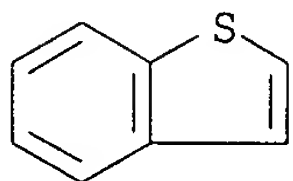
RN 35363-40-7 HCAPLUS
 CN Carbonic acid, ethyl propyl ester (7CI, 9CI) (CA INDEX NAME)



RN 56525-42-9 HCAPLUS
 CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)



IT 95-15-8D, Thionaphthene, halo derivs.
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolyte solns. containing thionaphthene derivs. for
 secondary lithium batteries)
 RN 95-15-8 HCAPLUS
 CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



(3)

L188 ANSWER 2 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2006:745637 HCAPLUS
 DN 145:296106
 TI Nonaqueous **electrolyte** solution and secondary **battery**
 containing the solution
 IN Kim, Hak Su; Kim, Jong Seop; Park, Myeong Guk; Yang, Ho Seok
 PA **Cheil Industries Inc., S. Korea**
 SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7
 DT **Patent**
 LA Korean
 FAN.CNT 1

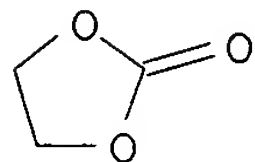
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|--------------|
| PI | KR 2004061572 | A | 20040707 | KR 2002-87845 | 20021231 <-- |
| PRAI | KR 2002-87845 | | 20021231 | <-- | |

AB A nonaq. **electrolyte** solution and a secondary **battery**
 containing the **electrolyte** solution are provided to reduce the
 generation of gas at a high temperature (85°) remarkably, thereby
 preventing the swelling due to the generation of gas of a **battery**
 and improving the capacity storage at a high temperature The
electrolyte solution has a Li salt dissolved in a
 carbonate-based organic **solvent** mixture; and 0.1-10 weight parts of a
 1-phenylsulfonyl pyrrole derivative or 1-phenylsulfonyl thiophene derivative
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 616-38-6, Dimethyl
 carbonate 623-53-0, Ethyl methyl carbonate 21324-40-3,
 Lithium hexafluorophosphate 56525-42-9, Methyl propyl
 carbonate
 RL: DEV (Device component use); USES (Uses)

(**electrolyte** solns. containing phenylsulfonyl pyrrole derivs. or phenylsulfonyl thiophene derivs. for secondary **batteries**)

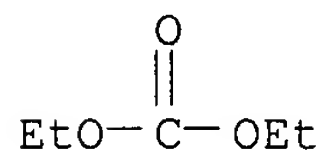
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



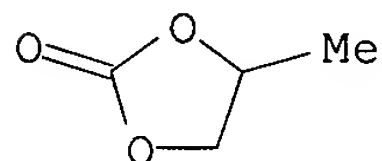
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



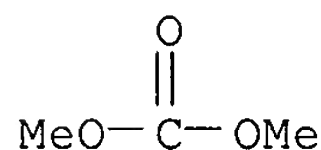
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



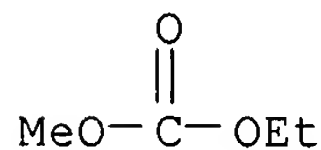
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



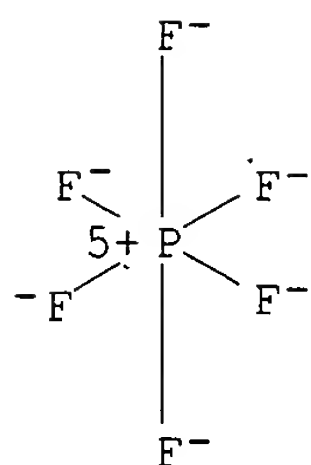
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



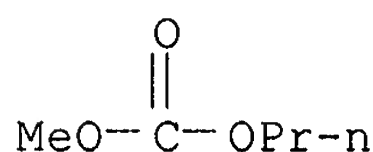
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

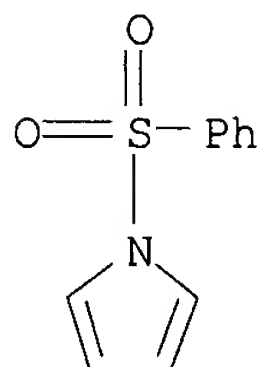


● Li⁺

RN 56525-42-9 HCAPLUS
CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)



IT 16851-82-4D, 1-Phenylsulfonyl pyrrole, derivs.
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solns. containing phenylsulfonyl pyrrole derivs. or
phenylsulfonyl thiophene derivs. for secondary batteries)
RN 16851-82-4 HCAPLUS
CN 1H-Pyrrole, 1-(phenylsulfonyl)- (9CI) (CA INDEX NAME)



2

L188 ANSWER 3 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:753254 HCAPLUS
DN 141:228183
TI A nonaqueous electrolyte for lithium secondary
battery
IN Kim, Jin-Hee; Kim, Jin-Sung; Hwang, Sang-Moon
; Paik, Meen-Seon; Kim, Hak-Soo
PA Samsung SDI Co., Ltd., S. Korea; Cheil Industries Inc.
SO Eur. Pat. Appl., 33 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|------------|------|----------|-----------------|--------------|
| PI | EP 1458048 | A1 | 20040915 | EP 2003-90262 | 20030821 <-- |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

| | | | | |
|---------------|----|----------|----------------|--------------|
| KR 2004080775 | A | 20040920 | KR 2003-15749 | 20030313 <-- |
| JP 2005108439 | A | 20050421 | JP 2003-183239 | 20030626 <-- |
| CN 1531134 | A | 20040922 | CN 2003-155332 | 20030827 <-- |
| US 2004185347 | A1 | 20040923 | US 2003-658272 | 20030910 <-- |

PRAI KR 2003-15749 A 20030313 <--

OS MARPAT 141:228183

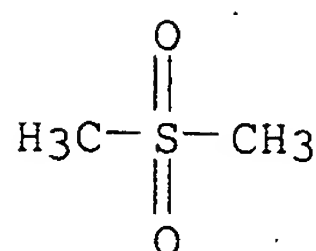
AB An **electrolyte** for a **lithium** secondary **battery** includes **lithium** salts, a nonaq. organic **solvent**, and additive compds. The additive compds. added to the **electrolyte** of the present invention decompose earlier than the organic **solvent** to form a conductive polymer layer on the surface of a pos. electrode, and prevent decomposition of the organic **solvent**. Accordingly, the **electrolyte** inhibits gas generation caused by decomposition of the organic **solvent** at initial charging, and thus reduces an increase of internal pressure and swelling during high temperature storage, and also improves safety of the **battery** during overcharge.

IT 67-71-0, Methylsulfone 71-43-2, Benzene, uses 77-77-0, Vinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 126-33-0, Tetramethylene sulfone 127-63-9, Phenylsulfone 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, chain ester 616-38-6, Dimethyl carbonate 620-32-6, Benzylsulfone 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 1889-59-4, Ethylvinylsulfone 3680-02-2, Methylvinylsulfone 4437-85-8, Butylene carbonate 5535-43-3, m-ChloroPhenyl vinyl sulfone 5535-48-8, Phenylvinylsulfone 7439-93-2, **Lithium**, uses 7447-41-8, **Lithium** chloride (LiCl), uses 7791-03-9, **Lithium** perchlorate 10377-51-2, **Lithium** iodide 14024-11-4, Aluminum **lithium** chloride AlLiCl₄ 14283-07-9, **Lithium** tetrafluoroborate 18424-17-4, **Lithium** hexafluoroantimonate 21324-40-3, **Lithium** hexafluorophosphate 27359-10-0, Trifluorotoluene 28122-14-7, p-FluoroPhenyl vinyl sulfone 28452-93-9, Butadiene sulfone 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 35363-40-7, Ethyl propyl carbonate 37220-89-6, Aluminum **lithium** oxide 39300-70-4, **Lithium** nickel oxide 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5, **Lithium** nonafluorobutanesulfonate 162684-16-4, **Lithium** manganese nickel oxide

RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolyte** for **lithium** secondary **battery**)

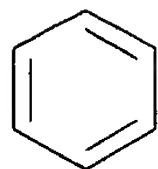
RN 67-71-0 HCAPLUS

CN Methane, sulfonylbis- (9CI) (CA INDEX NAME)



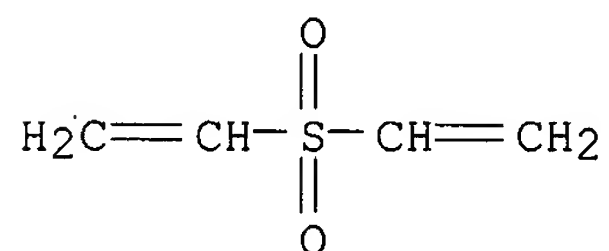
RN 71-43-2 HCAPLUS

CN Benzene (8CI, 9CI) (CA INDEX NAME)



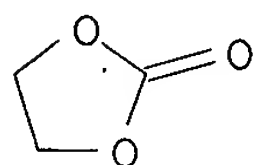
RN 77-77-0 HCAPLUS

CN Ethene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



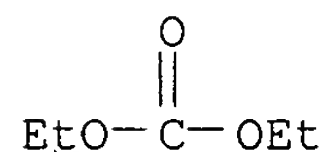
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



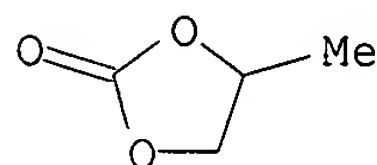
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



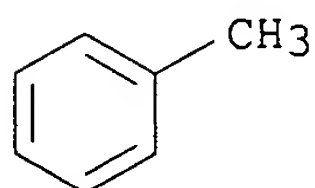
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



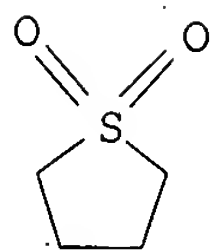
RN 108-88-3 HCAPLUS

CN Benzene, methyl- (9CI) (CA INDEX NAME)

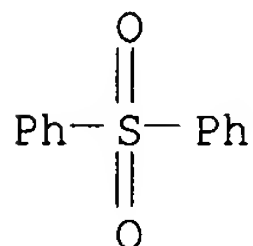


RN 126-33-0 HCAPLUS

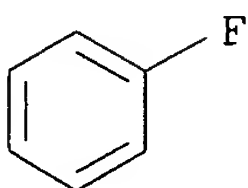
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



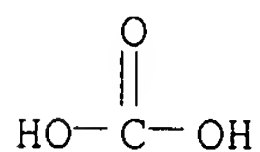
RN 127-63-9 HCAPLUS
 CN Benzene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



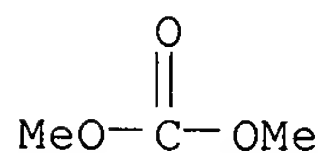
RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



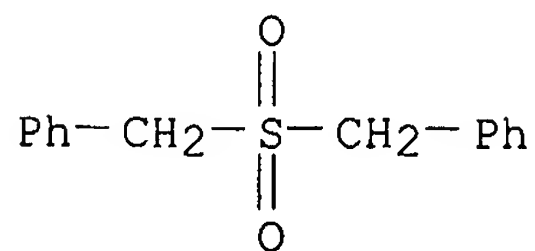
RN 463-79-6 HCAPLUS
 CN Carbonic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



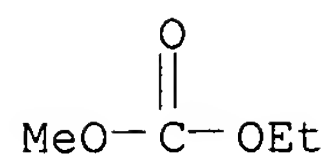
RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



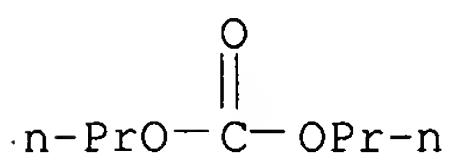
RN 620-32-6 HCAPLUS
 CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (9CI) (CA INDEX NAME)



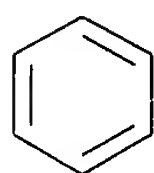
RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

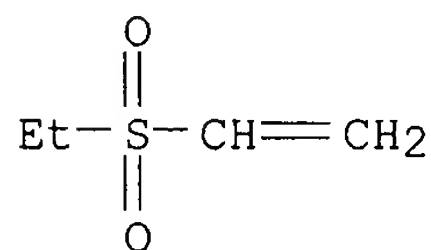


RN 1330-20-7 HCAPLUS
 CN Benzene, dimethyl- (9CI) (CA INDEX NAME)

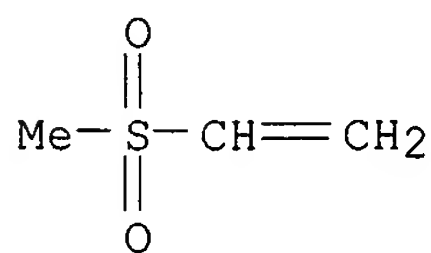


2 (D1-Me)

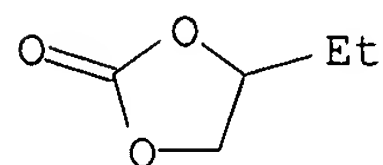
RN 1889-59-4 HCAPLUS
 CN Ethene, (ethylsulfonyl)- (9CI) (CA INDEX NAME)



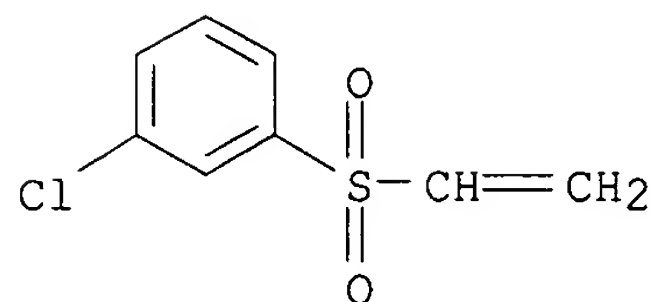
RN 3680-02-2 HCAPLUS
 CN Ethene, (methylsulfonyl)- (9CI) (CA INDEX NAME)



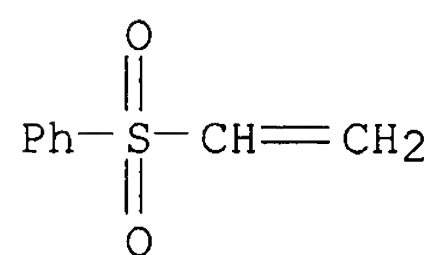
RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 5535-43-3 HCAPLUS
 CN Benzene, 1-chloro-3-(ethenylsulfonyl)- (9CI) (CA INDEX NAME)



RN 5535-48-8 HCAPLUS
 CN Benzene, (ethenylsulfonyl)- (9CI) (CA INDEX NAME)



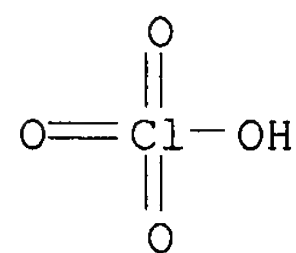
RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7447-41-8 HCAPLUS
 CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



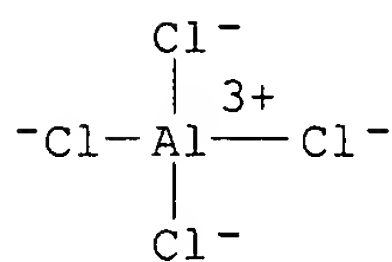
● Li

RN 10377-51-2 HCAPLUS
 CN Lithium iodide (LiI) (9CI) (CA INDEX NAME)

I-Li

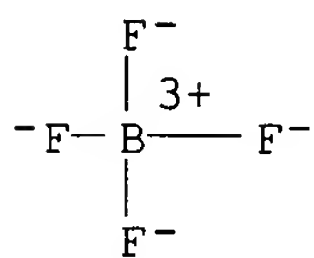
RN 14024-11-4 HCAPLUS

CN Aluminate(1-), tetrachloro-, lithium, (T-4)- (9CI) (CA INDEX NAME)

● Li⁺

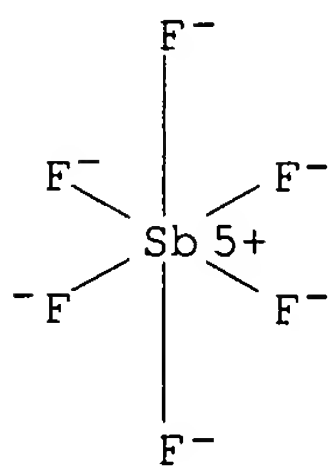
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

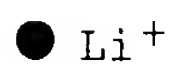
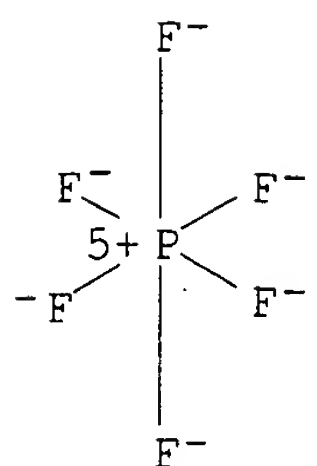
RN 18424-17-4 HCAPLUS

CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

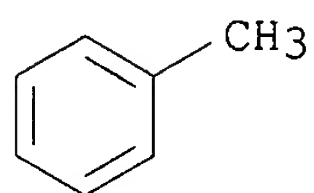
● Li⁺

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

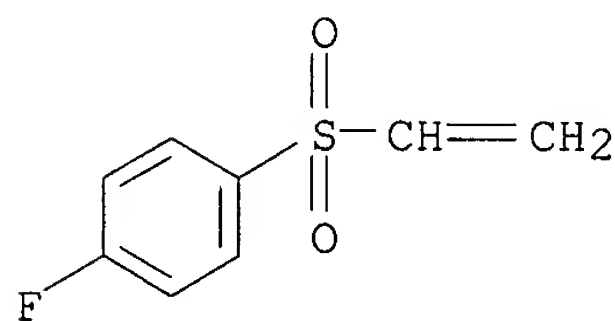


RN 27359-10-0 HCAPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

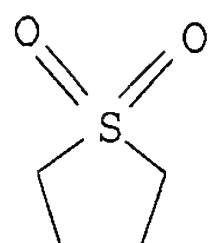
RN 28122-14-7 HCAPLUS
 CN Benzene, 1-(ethenylsulfonyl)-4-fluoro- (9CI) (CA INDEX NAME)



RN 28452-93-9 HCAPLUS
 CN Thiophene, dihydro-, 1,1-dioxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

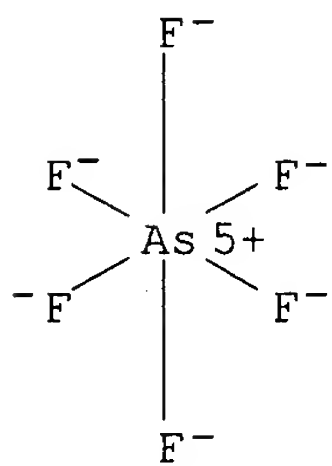
CM 1

CRN 126-33-0
 CMF C4 H8 O2 S



RN 29935-35-1 HCAPLUS

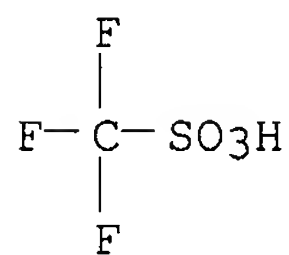
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 33454-82-9 HCAPLUS

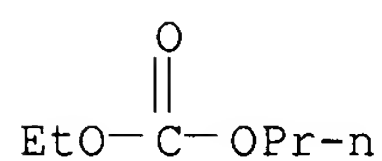
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 35363-40-7 HCAPLUS

CN Carbonic acid, ethyl propyl ester (7CI, 9CI) (CA INDEX NAME)



RN 37220-89-6 HCAPLUS

CN Aluminum lithium oxide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | x | 17778-80-2 |
| Li | x | 7439-93-2 |
| Al | x | 7429-90-5 |

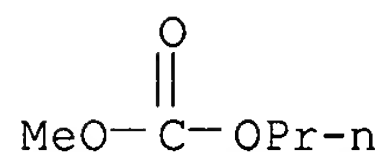
RN 39300-70-4 HCAPLUS

CN Lithium nickel oxide (9CI) (CA INDEX NAME)

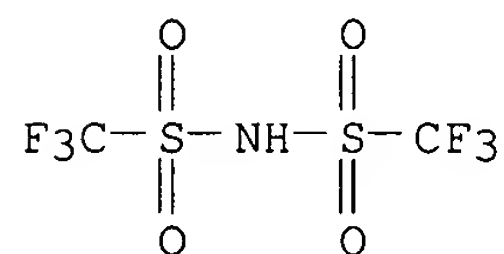
| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | x | 17778-80-2 |

| | | | | |
|----|--|---|--|-----------|
| Ni | | x | | 7440-02-0 |
| Li | | x | | 7439-93-2 |

RN 56525-42-9 HCAPLUS
 CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)

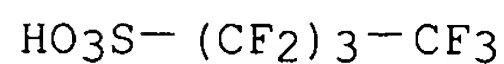


RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 131651-65-5 HCAPLUS
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (9CI)
 (CA INDEX NAME)



● Li

RN 162684-16-4 HCAPLUS
 CN Lithium manganese nickel oxide (9CI) (CA INDEX NAME)

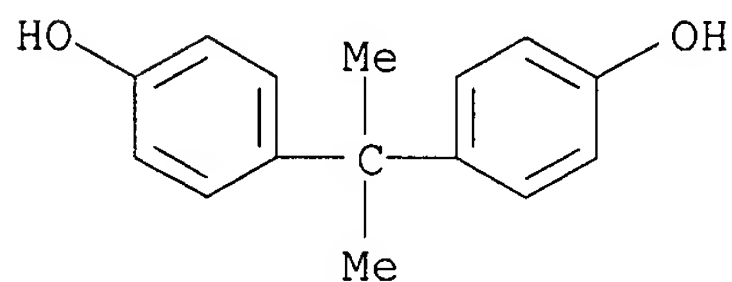
| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | x | 17778-80-2 |
| Ni | x | 7440-02-0 |
| Mn | x | 7439-96-5 |
| Li | x | 7439-93-2 |

IT 80-05-7, Bisphenol A, uses 95-15-8, Thianaphthene
 117-80-6, 2,3-Dichloro-1,4-naphthoquinone 271-89-6,
 2,3-Benzofuran 524-42-5, 1,2-Naphthoquinone 625-86-5,
 2,5-Dimethylfuran 693-98-1, 2-Methylimidazole 1192-62-7
 , 2-Acetylfuran 1193-79-9, 2-Acetyl-5-methylfuran
 4265-27-4, 2-Butylbenzofuran 7474-83-1,
 3-Bromo-1,2-naphthoquinone 13243-65-7, 2,3-Dibromo-1,4-
 naphthoquinone 16851-82-4, 1-(Phenylsulfonyl)pyrrole
 RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. **electrolyte** for **lithium** secondary
battery)

RN 80-05-7 HCAPLUS

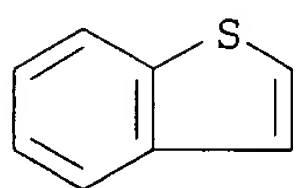
CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



①

RN 95-15-8 HCAPLUS

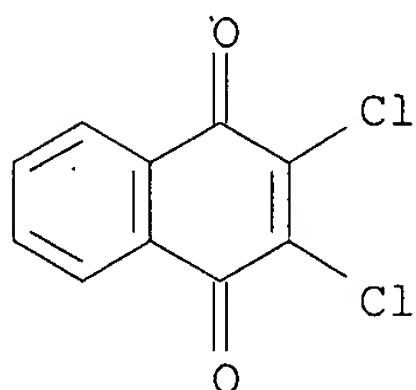
CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



③

RN 117-80-6 HCAPLUS

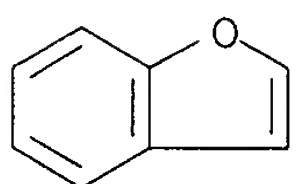
CN 1,4-Naphthalenedione, 2,3-dichloro- (9CI) (CA INDEX NAME)



④

RN 271-89-6 HCAPLUS

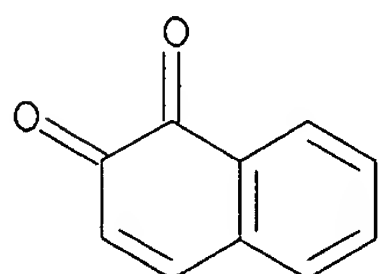
CN Benzofuran (6CI, 8CI, 9CI) (CA INDEX NAME)



③

RN 524-42-5 HCAPLUS

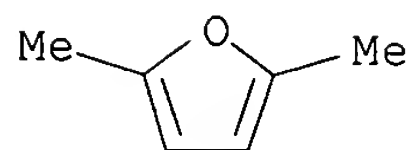
CN 1,2-Naphthalenedione (9CI) (CA INDEX NAME)



⑤

RN 625-86-5 HCAPLUS

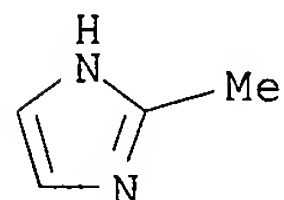
CN Furan, 2,5-dimethyl- (6CI, 8CI, 9CI) (CA INDEX NAME)



(2)

RN 693-98-1 HCAPLUS

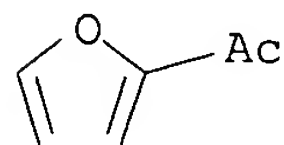
CN 1H-Imidazole, 2-methyl- (9CI) (CA INDEX NAME)



(2)

RN 1192-62-7 HCAPLUS

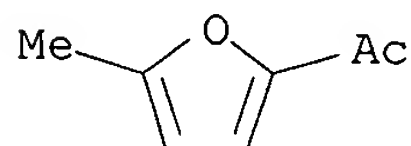
CN Ethanone, 1-(2-furanyl)- (9CI) (CA INDEX NAME)



(2)

RN 1193-79-9 HCAPLUS

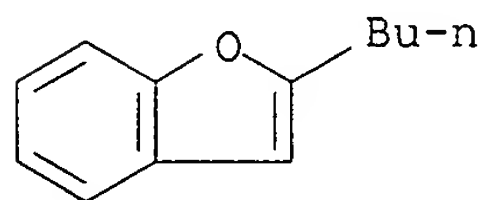
CN Ethanone, 1-(5-methyl-2-furanyl)- (9CI) (CA INDEX NAME)



(2)

RN 4265-27-4 HCAPLUS

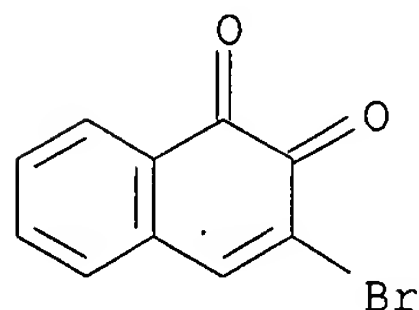
CN Benzofuran, 2-butyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



(3)

RN 7474-83-1 HCAPLUS

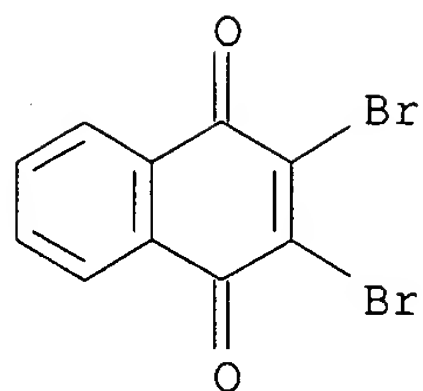
CN 1,2-Naphthalenedione, 3-bromo- (9CI) (CA INDEX NAME)



(5)

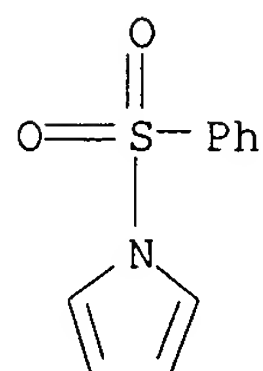
RN 13243-65-7 HCAPLUS

CN 1,4-Naphthalenedione, 2,3-dibromo- (9CI) (CA INDEX NAME)



(4)

RN 16851-82-4 HCAPLUS
 CN 1H-Pyrrole, 1-(phenylsulfonyl)- (9CI) (CA INDEX NAME)



(2)

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Anon | 1993 | 43-44 | 1 | J POWER SOURCES | |
| Arimura, T | 1999 | 118 | 1 | SOLID STATE IONICS | |
| Moli Energy 1990 Ltd | 1997 | | | EP 0759641 A | HCAPLUS |
| Moli Energy 1990 Ltd | 1997 | | | EP 0776058 A | HCAPLUS |
| Moller, K | 2003 | 119-1 | 561 | JOURNAL OF POWER SOU | HCAPLUS |
| Naess, R | 2000 | | | US 6074777 A | HCAPLUS |
| Ube Industries | 2003 | | | EP 1335445 A | HCAPLUS |
| Ube Industries | 2003 | | | EP 1361622 A | HCAPLUS |
| Wang, C | 1998 | 74 | 142 | JOURNAL OF POWER SOU | HCAPLUS |
| Yoshiharu, M | 1989 | 26 | 579 | JOURNAL OF POWER SOU | |

L188 ANSWER 4 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:392771 HCAPLUS

DN 140:378118

TI Electrolyte composition for **lithium** secondary battery having high overcharge-safety

IN Roh, Kwonsun; Choi, Jonghyuk; Lee, Jaemyoung; Lee, Jonha

PA SKC Limited, S. Korea

SO PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DT **Patent**

LA English

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------|---|----------|-----------------|--------------|
| ----- | ----- | ----- | ----- | ----- |
| PI WO 2004040687 | A1 | 20040513 | WO 2003-KR2274 | 20031027 <-- |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, | | | |

TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

KR 2004037534 A 20040507 KR 2002-66067 20021029 <--

AU 2003272137 A1 20040525 AU 2003-272137 20031027 <--

PRAI KR 2002-66067 A 20021029 <--

WO 2003-KR2274 W 20031027

AB An electrolyte composition comprising a nitrogen-containing compound, cyclohexyl

benzene, an organic solvent and a **lithium** salt is advantageously used for the preparation of a **lithium** secondary battery having high overcharge-safety, cycling life and high-temperature swelling properties at the same time.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

288-47-1, Thiazole 616-38-6, Dimethyl carbonate

7439-93-2D, **Lithium**, salt 7791-03-9,

Lithium perchlorate 12190-79-3, Cobalt **lithium**

oxide colio2 14283-07-9, **Lithium** tetrafluoroborate

18424-17-4, **Lithium** hexafluoroantimonate

21324-40-3, **Lithium** hexafluorophosphate

29935-35-1, **Lithium** hexafluoroarsenate

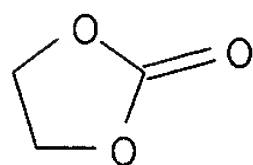
33454-82-9, **Lithium** triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)

(electrolyte composition for **lithium** secondary battery having high overcharge-safety)

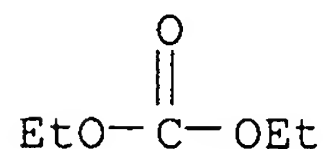
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



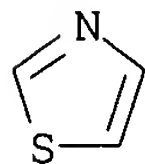
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 288-47-1 HCAPLUS

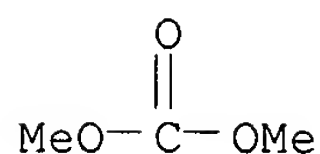
CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)



6

RN 616-38-6 HCAPLUS

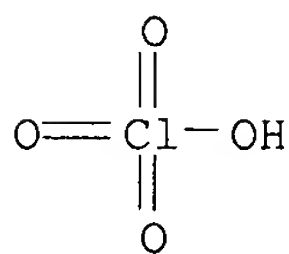
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

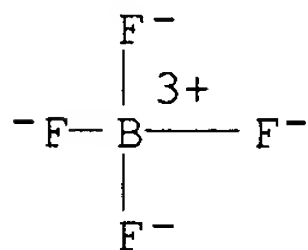


● Li

RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO₂) (9CI) (CA INDEX NAME)

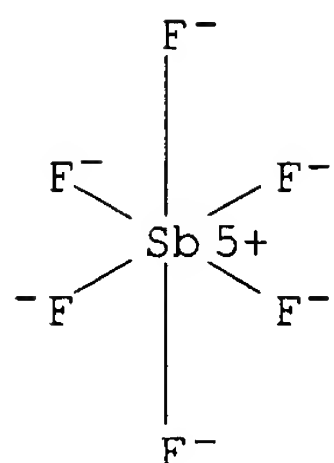
| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



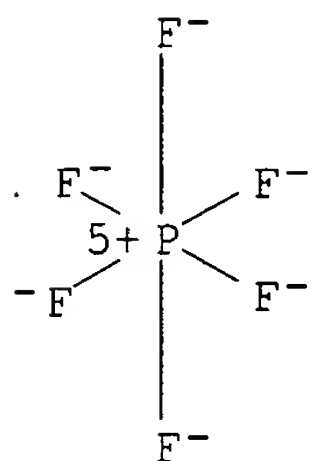
● Li⁺

RN 18424-17-4 HCAPLUS
 CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)



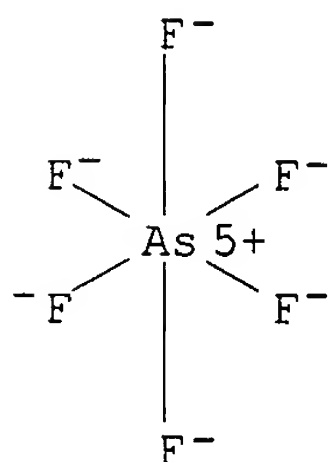
● Li⁺

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



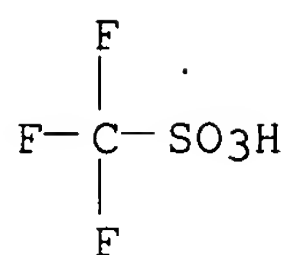
● Li⁺

RN 29935-35-1 HCAPLUS
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



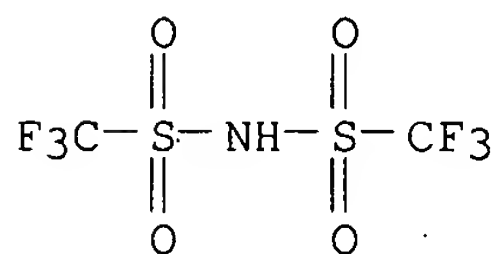
● Li⁺

RN 33454-82-9 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)

● Li

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Gs-Melcotec Co Ltd | 2002 | | | JP 14-313415 A | |
| Hitachi Maxell Ltd | 2002 | | | JP 14-56892 A | |
| Matsushita Electric Ind | 2002 | | | JP 14-117895 A | |
| Matsushita Electric Ind | 1975 | | | US 3872358 A | HCAPLUS |
| Samsung Sdi Co Ltd | 2002 | | | US 6395429 A | HCAPLUS |
| Skc Co Ltd | 2002 | | | KR 0262152 A | |
| Ube Ind Ltd | 2002 | | | JP 14-203594 A | |
| Ube Ind Ltd | 2002 | | | JP 14-260725 A | |

L188 ANSWER 5 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:201026 HCAPLUS

DN 140:220743

TI Nonaqueous electrolytes and nonaqueous electrolyte secondary
batteries with prevented overcharging

IN Awano, Hiroki

PA Toyota Motor Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

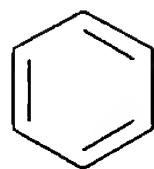
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | JP 2004079436 | A | 20040311 | JP 2002-241047 | 20020821 <-- |
| PRAI | JP 2002-241047 | | 20020821 | <-- | |

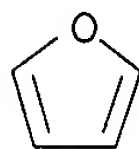
AB The title nonaq. electrolyte gels comprise a polymer containing dispersions of
nonaq. solvent solution of monomers of conductive polymers, which polymerize
above certain voltage. The monomers may be ≥1 compd(s). selected

from benzenes, biphenyls, pyrroles, furans, indoles, and thiophenes. Secondary **batteries** comprising Li-intercalating electrodes and the said electrolytes are also claimed. The monomers start to polymerize under application of certain voltage to the **battery**

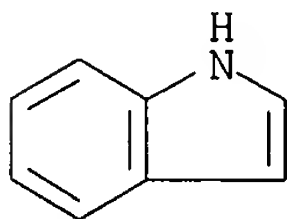
IT 71-43-2D, Benzene, derivs. 110-00-9D, Furan, derivs.
 120-72-9D, Indole, derivs. 7439-93-2D, **Lithium**
 , poly(ethylene oxide) or poly(vinylidene fluoride) complexes,
 hexafluorophosphate-containing 21324-40-3D, **Lithium**
 hexafluorophosphate, poly(ethylene oxide) or poly(vinylidene fluoride)
 complexes
 RL: DEV (Device component use); USES (Uses)
 (addition of monomers polymerizable under certain voltage for safety in
 overcharging of secondary **lithium batteries**)
 RN 71-43-2 HCAPLUS
 CN Benzene (8CI, 9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS
 CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



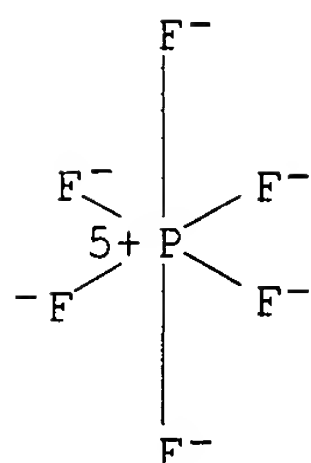
RN 120-72-9 HCAPLUS
 CN 1H-Indole (9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

L188 ANSWER 6 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:41827 HCAPLUS

DN 140:79851

TI Electrolyte composition for **lithium** secondary battery having high overcharge-safety

IN Park, Chi-Kyun; Zhang, Zhiwei; Chai, Chul; Lee, Jonha; Roh, Kwonsun

PA SKC Limited, S. Korea

SO PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DT **Patent**

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|--|--------------|-----------------|--------------|
| PI | WO 2004006378 | A1 | 20040115 | WO 2003-KR1332 | 20030707 <-- |
| | W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| | RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| | KR 2004006057 | A | 20040124 | KR 2002-39570 | 20020709 <-- |
| | AU 2003281410 | A1 | 20040123 | AU 2003-281410 | 20030707 <-- |
| PRAI | KR 2002-39570 | A | 20020709 <-- | | |
| | WO 2003-KR1332 | W | 20030707 | | |
| AB | An electrolyte composition comprising a nitrogen-containing compound, biphenyl, an organic solvent and a lithium salt is advantageously used for the preparation of a lithium secondary battery having high overcharge-safety, cycling life and capacity properties. | | | | |
| IT | 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 288-47-1, Thiazole 616-38-6, Dimethyl carbonate 7439-93-2D, Lithium , salt 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate | | | | |

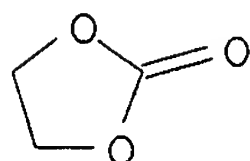
33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)

(electrolyte composition for **lithium** secondary battery having high overcharge-safety)

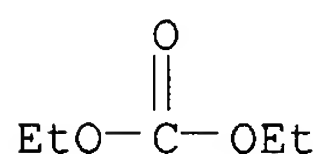
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



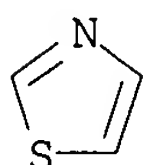
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



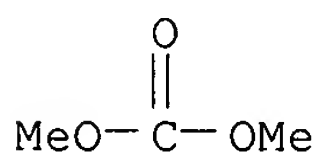
RN 288-47-1 HCAPLUS

CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



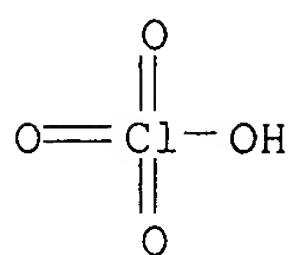
RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

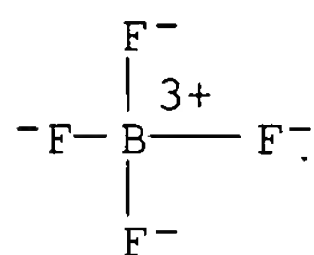


● Li

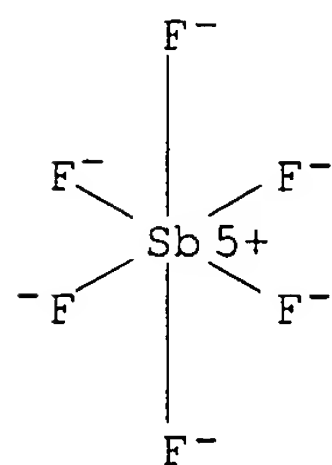
RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO₂) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

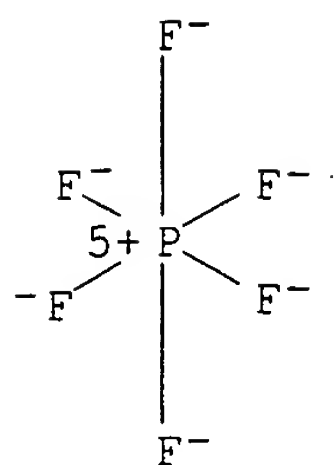
RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

RN 18424-17-4 HCAPLUS
 CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

● Li⁺

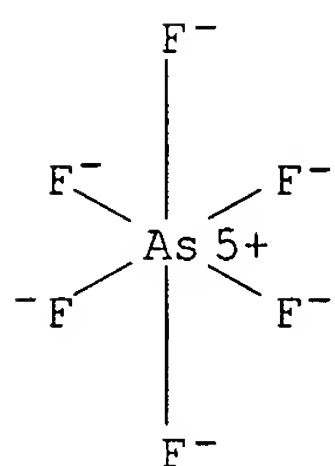
RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 29935-35-1 HCAPLUS

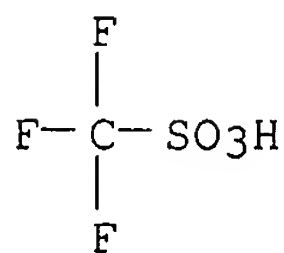
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 33454-82-9 HCAPLUS

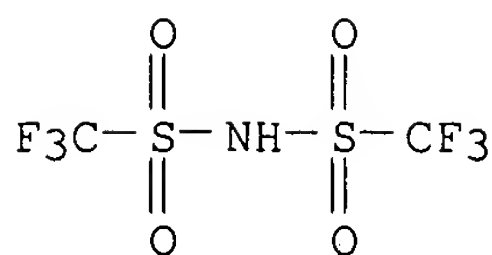
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| International Business | 1991 | | | US 5021129 A | HCAPLUS |
| International Business | 1991 | | | US 5045159 A | HCAPLUS |
| International Business | 1992 | | | US 5104944 A | HCAPLUS |
| International Business | 1993 | | | US 5203955 A | HCAPLUS |
| International Business | 1993 | | | US 5242713 A | HCAPLUS |
| International Business | 1995 | | | US 5443865 A | |
| Skc Co Ltd | 2002 | | | EP 1225649 A | HCAPLUS |
| Sumitomo Chemical Compa | 1994 | | | US 5281327 A | HCAPLUS |

L188 ANSWER 7 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2003:633136 HCAPLUS

DN 139:152388

TI Nonaqueous **electrolyte** compositions for **lithium**
secondary **batteries**

IN Song, Eui-hwan; Jung, Won-il; Hwang, Duck-chul

PA **Samsung Sdi Co., Ltd., S. Korea**SO U.S. Pat. Appl. Publ., 5 pp., Cont.-in-part of U.S. Ser. No. 565,158,
abandoned.

CODEN: USXXCO

DT **Patent**

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | US 2003152840 | A1 | 20030814 | US 2002-278354 | 20021022 <-- |
| | US 7150944 | B2 | 20061219 | | |
| PRAI | US 2000-565158 | B2 | 20000503 | <-- | |

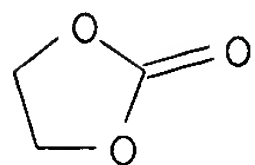
AB Disclosed are nonaq. **electrolyte** compns. of the present invention that comprise nonaq. **solvents** and monomers such as aniline, phenanthrene, ethylenedioxythiophene, benzothiophene or derivs. thereof. The monomers are contained in the **electrolytes** of the present invention in the amts. of less than about 5.0 weight% of the nonaq. **solvent**. In the present invention, cyclic carbonates, linear carbonates or mixts. thereof can be used as the nonaq. **solvents**. The **electrolyte** compns. of the present invention improve the safety characteristics of the cell by preventing the flow of large currents resulting from overcharge or feed-through, and also improve cell life characteristic by helping the reversible transfer of **lithium** ions.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0, Ethyl methyl carbonate 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium**

hexafluoroarsenate 33454-82-9, Lithium triflate
210353-06-3, Cobalt lithium nickel strontium oxide
RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolyte** compns. for **lithium** secondary
batteries)

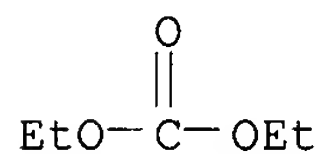
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



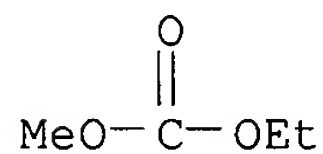
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



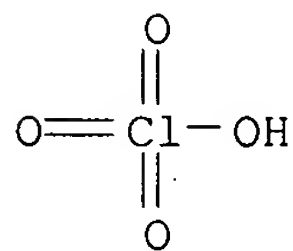
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7791-03-9 HCAPLUS

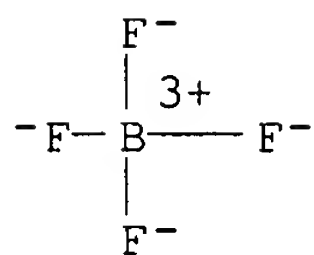
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

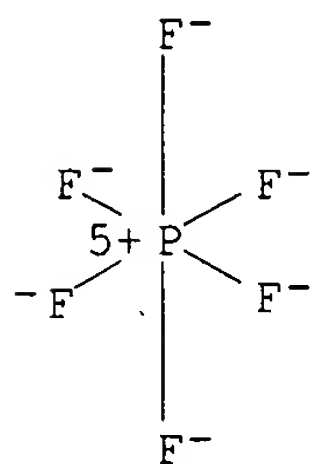
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



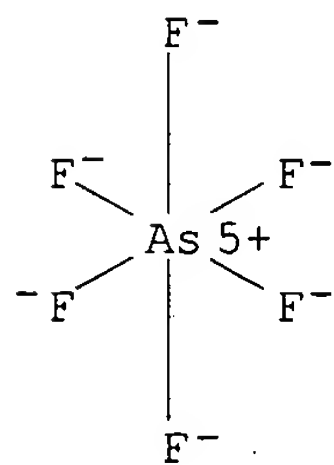
● Li^+

RN 21324-40-3 HCAPLUS
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



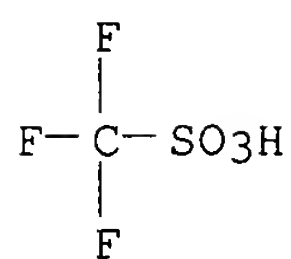
● Li^+

RN 29935-35-1 HCAPLUS
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li^+

RN 33454-82-9 HCAPLUS
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 210353-06-3 HCAPLUS

CN Cobalt lithium nickel strontium oxide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | x | 17778-80-2 |
| Co | x | 7440-48-4 |
| Sr | x | 7440-24-6 |
| Ni | x | 7440-02-0 |
| Li | x | 7439-93-2 |

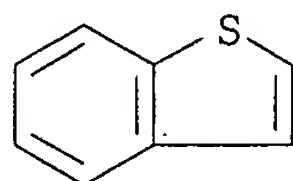
IT 95-15-8, Benzothiophene

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. **electrolyte** compns. for **lithium** secondary
batteries)

RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



(3)

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Anon | 1986 | | | JP 61161673 | HCAPLUS |
| Anon | 1995 | | | JP 07220757 | HCAPLUS |
| Anon | 1995 | | | JP 07320778 | HCAPLUS |
| Anon | 1996 | | | EP 759641 | HCAPLUS |
| Anon | 1997 | | | EP 776058 | HCAPLUS |
| Anon | 1998 | | | JP 10189008 | HCAPLUS |
| Anon | 1998 | | | EP 878861 | HCAPLUS |
| Anon | 2000 | | | JP 2000090970 | HCAPLUS |
| Hwang | 2003 | | | US 6521375 B1 | HCAPLUS |
| Hwang | 2003 | | | US 6613480 B1 | HCAPLUS |
| Jung | 2003 | | | US 6511769 B1 | HCAPLUS |
| Lee | 1996 | | | US 5538812 A | HCAPLUS |
| Linden, D | 1995 | 2 | 36.1 | Handbok of Batteries | |
| Mao | 2000 | | | US 6074776 A | HCAPLUS |
| Matsufuji | 1998 | | | US 5759714 A | HCAPLUS |
| Song | 2003 | | | US 20030152840 A1 | HCAPLUS |
| Song | 2003 | | | US 6503663 B1 | HCAPLUS |
| Takei | 2002 | | | US 6337155 B1 | HCAPLUS |

Tsutsumi | 1998 | | US 5731106 A | HCAPLUS

L188 ANSWER 8 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:886243 HCAPLUS

DN 137:387083

TI Nonaqueous gel composition containing crosslinked polymer having alkylammonium or piperazinium structure and electrochemical cell

IN Aizawa, Wakana; Ikegami, Koshiro; Takada, Masakazu; Takaoka, Kazuchiyo

PA Mitsubishi Paper Mills, Ltd., Japan; Nippon Unicar Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 9 pp.

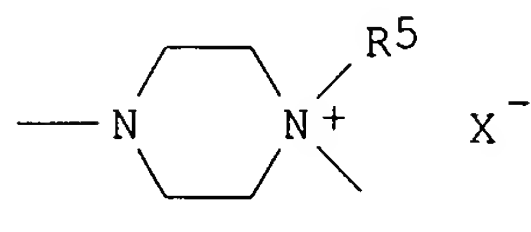
CODEN: JKXXAF

DT **Patent**

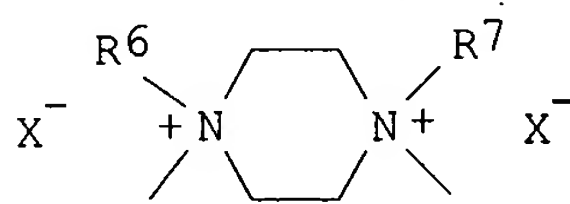
LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 2002332417 | A | 20021122 | JP 2001-138273 | 20010509 <-- |
| PRAI | JP 2001-138273 | | 20010509 | <-- | |
| GI | | | | | |



I



II

AB The title gel composition comprises a polymer having a crosslinked structure R1NX, R2NYNX2, R4NYNX, I, or II [R1-R7 = (substituted) C1-9 alkyl; X = monovalent inorg. or organic acid or its equivalent; Y = C1-8 alkylene, alkylene

oxide, or xylylene]. The composition, especially suitable for secondary Li batteries and capacitors, has high resistance to free acids generated in an electrolyte solution

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 21324-40-3,

Lithium hexafluorophosphate

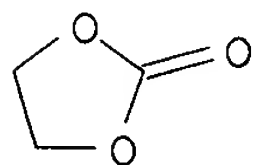
RL: DEV (Device component use); USES (Uses)

(composition containing; nonaq. gel electrolyte composition containing crosslinked

polymer having alkylammonium or piperazinium structure for battery and capacitor)

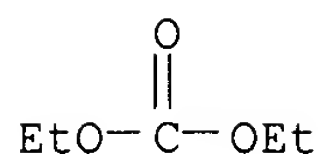
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

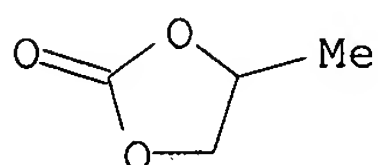


RN 105-58-8 HCAPLUS

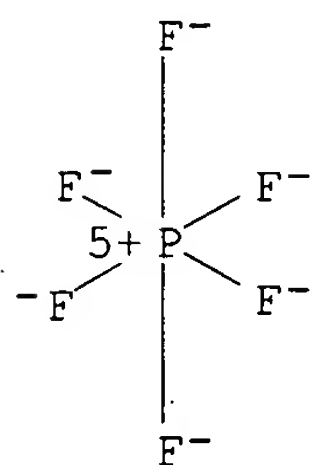
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

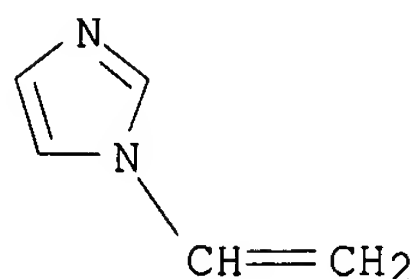


RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

IT **1072-63-5DP**, N-Vinylimidazole, polymers with alkylammonium compound and piperazinium compound
 RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
 (nonaq. gel electrolyte composition containing crosslinked polymer having alkylammonium or piperazinium structure for battery and capacitor)
 RN 1072-63-5 HCAPLUS
 CN 1H-Imidazole, 1-ethenyl- (9CI) (CA INDEX NAME)



(6)

L188 ANSWER 9 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2002:736752 HCAPLUS
 DN 137:265678
 TI High ionic conductivity gel polymer electrolyte for rechargeable polymer batteries
 IN Park, Chi-Kyun; Zhang, Zhiwei; Sun, Lu Ying; Chai, Chul

PA SKC Co., Ltd., USA
 SO U.S. Pat. Appl. Publ., 9 pp., Cont.-in-part of U.S. Ser. No. 760,720.
 CODEN: USXXCO

DT **Patent**

LA English

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|--------------|
| PI | US 2002136959 | A1 | 20020926 | US 2001-986459 | 20011108 <-- |
| | US 6841303 | B2 | 20050111 | | |
| | US 2002136958 | A1 | 20020926 | US 2001-760720 | 20010117 <-- |
| | EP 1225649 | A2 | 20020724 | EP 2001-310592 | 20011219 <-- |
| | EP 1225649 | A3 | 20020807 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| | KR 2002062152 | A | 20020725 | KR 2002-421 | 20020104 <-- |
| | CN 1367201 | A | 20020904 | CN 2002-101700 | 20020117 <-- |
| PRAI | US 2001-760720 | A2 | 20010117 | <-- | |
| | US 2001-986459 | A | 20011108 | <-- | |

AB Ionic gel polymer electrolytes for rechargeable polymer batteries are disclosed. In preferred forms, a gel polymer precursor electrolyte is formed by dissolving a gelling agent into organic liquid electrolytes, and then gelling the precursor in situ at elevated temperature after pouring it into a battery case that contains a cathode, an anode and a separator. The gel polymer electrolytes exhibit excellent ionic conductivity of up to about 10⁻² S/cm and voltage stability for **lithium** rechargeable batteries. Most preferably, the gel polymer electrolyte is the reaction product of (A) nitrogen-group containing polymers, copolymers, oligomers or monomers that are capable of reacting with halogen compds. or epoxy compds., such as, polymers, copolymers, oligomers or monomers containing primary, secondary or tertiary amines, and (B) halide or epoxy-group containing polymers, copolymers, oligomers or monomers that are capable of reacting with nitrogen-containing compds., such as polymers, copolymers, oligomers or monomers containing alkylene halides or halomethyl group substituted aromatic units or at least one epoxy unit. Especially preferred (A) materials include pyridine compds., and most preferably vinylpyridines, such as poly(2-vinylpyridine) and copolymers thereof. Especially preferred compds. useable as material (B) include bis(bromomethyl)benzene, α,α' -dibromoxylene, diiodoalkanes, 3,4-epoxycyclohexylmethyl-3',4'-epoxycyclohexanecarboxylate, butadiene diepoxide, and butanediol diglycidyl ether.

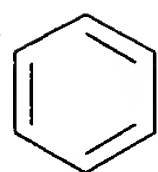
IT **71-43-2D**, Benzene, halomethyl derivs., polymers **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **288-47-1**; Thiazole **616-38-6**, Dimethyl carbonate **7791-03-9**, **Lithium** perchlorate **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate **90076-65-6**

RL: DEV (Device component use); USES (Uses)

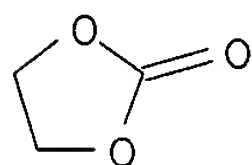
(high ionic conductivity gel polymer electrolyte for rechargeable polymer batteries)

RN 71-43-2 HCAPLUS

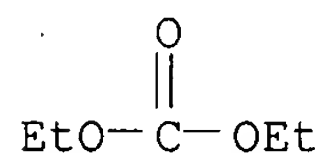
CN Benzene (8CI, 9CI) (CA INDEX NAME)



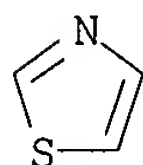
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

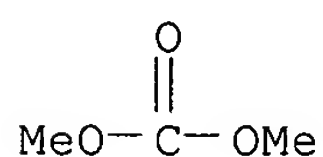


RN 288-47-1 HCAPLUS
CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)

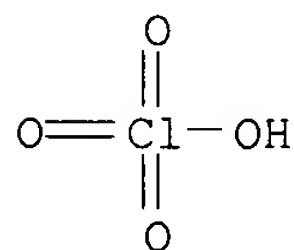


6

RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME).

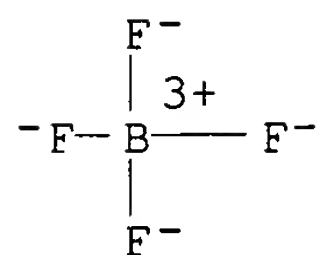


RN 7791-03-9 HCAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



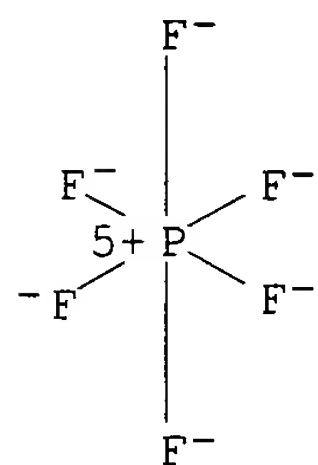
● Li

RN 14283-07-9 HCAPLUS
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



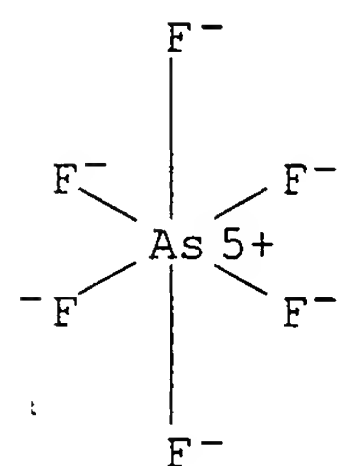
● Li⁺

RN 21324-40-3 HCAPLUS
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



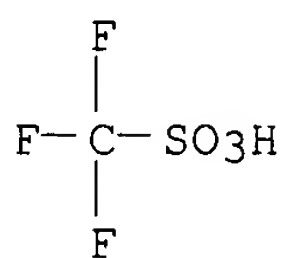
● Li⁺

RN 29935-35-1 HCAPLUS
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



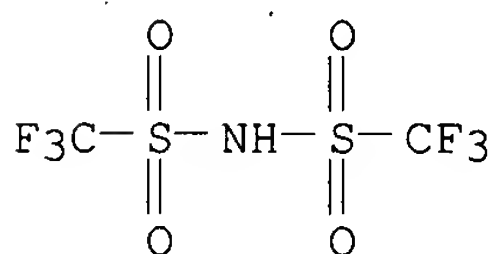
● Li⁺

RN 33454-82-9 HCAPLUS
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)

● Li

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| Abrahamand | 1990 | 137 | 1657 | J. Electrochem. Soc | |
| Andrieu | 1993 | | | US 5202009 A | HCAPLUS |
| Andrieu | 1995 | 40 | 2295 | Electrochimica Acta | HCAPLUS |
| Anon | 1999 | | | WO 9965101 | HCAPLUS |
| Arbizzani | 1994 | 72 | 115 | Solid State Ionics | HCAPLUS |
| Armand | 2000 | | | US 6120696 A | HCAPLUS |
| Gozdz | 1994 | | | US 5296318 A | HCAPLUS |
| Hamrock | 2000 | | | US 6063522 A | HCAPLUS |
| Kluger | 1983 | | | US 4383103 A | HCAPLUS |
| Maruyama | 2002 | | | US 6420072 B1 | HCAPLUS |
| Passerini | 1944 | 141 | L80 | J. Electrochem. Soc. | |
| Tobishima | 1993 | | | US 5270134 A | HCAPLUS |

L188 ANSWER 10 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:714433 HCAPLUS

DN 137:250260

TI Secondary nonaqueous electrolyte **battery**IN Kuranaka, Satoshi; Bito, Yasuhiko; Kouduki, Kiyomi; Takahashi, Shozo; Eda,
Nobuo

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | ----- |
| PI JP 2002270223 | A | 20020920 | JP 2001-63065 | 20010307 <-- |

PRAI JP 2001-63065

20010307 <--

AB The **battery** has a nonaq. electrolyte solution containing an aromatic additive selected from biphenyl, furan, thiophene, and their derivs.; and a porous polyolefin separator, which has a gas permeability 250-800 s/100 mL (JIS P8117-1998), after holding in a 110° atmospheric for 15 min while stretched at 25 kg/cm² in its length direction, or after holding in a 130° atmospheric for 15 min while stretched at 25 kg/cm² in its width direction.

IT 96-49-1, Ethylene carbonate 110-00-9, Furan

120-72-9, Indole, uses 623-53-0, Ethyl methyl carbonate

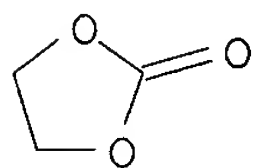
21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing aromatic additives for secondary lithium batteries)

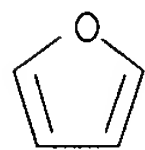
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



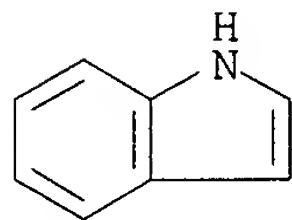
RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



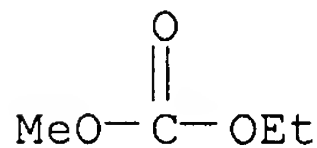
RN 120-72-9 HCAPLUS

CN 1H-Indole (9CI) (CA INDEX NAME)



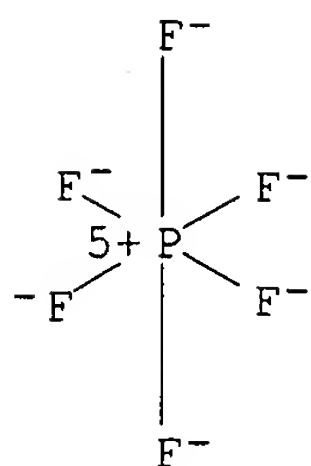
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

L188 ANSWER 11 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:505274 HCAPLUS

DN 137:81358

TI Ethylene carbonate- γ -butyrolactone-based nonaqueous electrolytes for secondary **batteries**

IN Sekino, Masahiro; Satoh, Asako; Fujiwara, Masashi; Hasebe, Hiroyuki

PA Kabushiki Kaisha Toshiba, Japan

SO U.S. Pat. Appl. Publ., 25 pp., Cont.-in-part of U. S. Ser. No.961,138.
CODEN: USXXCO

DT **Patent**

LA English

FAN.CNT 2

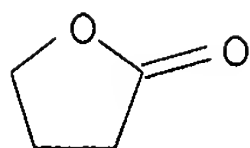
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|--------------|
| PI | US 2002086216 | A1 | 20020704 | US 2001-26816 | 20011227 <-- |
| | US 6861175 | B2 | 20050301 | | |
| | US 2002064712 | A1 | 20020530 | US 2001-961138 | 20010924 <-- |
| | <u>US 6787269</u> | B2 | 20040907 | | |
| | JP 2002184462 | A | 20020628 | JP 2001-338586 | 20010928 <-- |
| PRAI | JP 2000-296074 | A | 20000928 | <-- | |
| | US 2001-961138 | A2 | 20010924 | <-- | |
| | JP 2001-338586 | A | 20010928 | <-- | |

AB A nonaq. electrolyte, preferably in the form of a gel or liquid, for a secondary **battery** consists of 20-50 volume% ethylene carbonate and 40-80 volume% γ -butyrolactone, and includes a third solvent selected from ethylene sulfite, phenylethylene carbonate, 2-methylfuran, furan, thiophene, catechol carbonate, and vinyl ethylene carbonate. Optionally, the **battery** electrolyte can also contain a **lithium** salt as a solute, selected from LiClO₄, LiPF₆, LiBF₄, LiAsF₆, LiCF₃SO₃, LiN(CF₃SO₂)₂, and LiN(C₂F₅SO₂)₂. Under charge-discharge cycle tests at 45°, the capacity retention rate at the 100th charge-discharge cycle is $\geq 85\%$ of the discharge capacity in the first charge-discharge cycle.

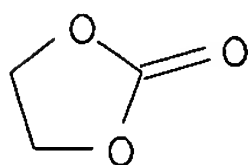
IT **96-48-0**, γ -Butyrolactone **96-49-1**, Ethylene carbonate **110-00-9**, Furan **534-22-5**, 2-Methylfuran
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolytes containing; ethylene carbonate- γ -butyrolactone-based nonaq. electrolytes for secondary **batteries**)

RN 96-48-0 HCAPLUS

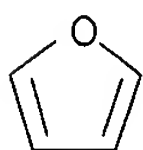
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



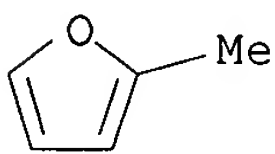
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



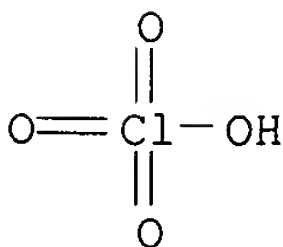
RN 110-00-9 HCAPLUS
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)

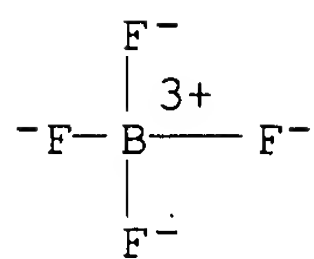


IT 7791-03-9, Lithium perchlorate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium
trifluoromethanesulfonate 90076-65-6, Methanesulfonamide,
1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt
RL: TEM (Technical or engineered material use); USES (Uses)
(solute, nonaq. electrolyte containing; ethylene carbonate-γ-
butyrolactone-based nonaq. electrolytes for secondary batteries
)
RN 7791-03-9 HCAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



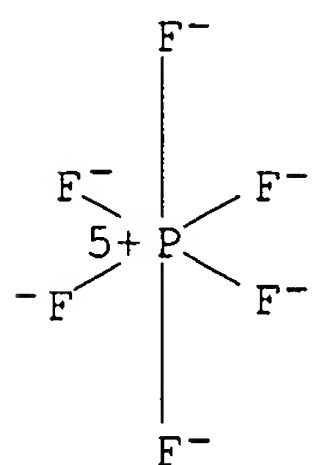
● Li

RN 14283-07-9 HCAPLUS
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



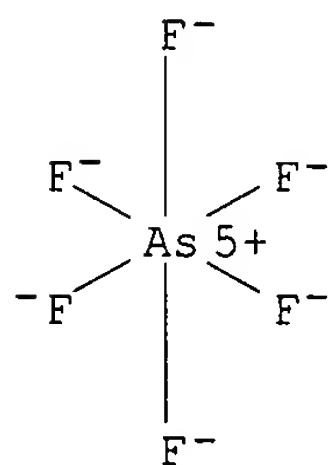
● Li^+

RN 21324-40-3 HCAPLUS
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



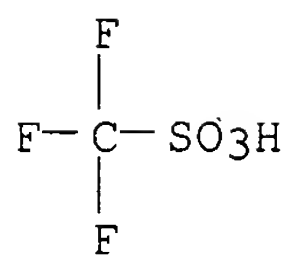
● Li^+

RN 29935-35-1 HCAPLUS
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



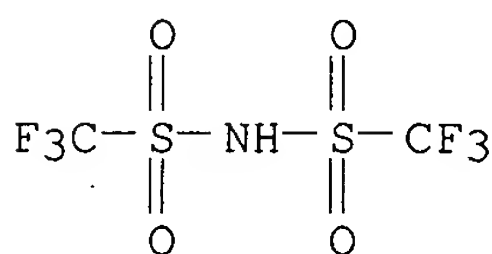
● Li^+

RN 33454-82-9 HCAPLUS
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)

● Li

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Anon | 1990 | | | EP 0398689 | HCAPLUS |
| Anon | 1992 | | | EP 0478379 | HCAPLUS |
| Anon | 1992 | | | JP 414769 | |
| Anon | 1999 | | | JP 1197062 | |
| Anon | 2000 | | | WO 0079632 | HCAPLUS |
| Anon | 2000 | | | EP 0997960 | HCAPLUS |
| Anon | 2000 | | | EP 1030399 | HCAPLUS |
| Anon | 2000 | | | JP 2000235868 | HCAPLUS |
| Anon | 2001 | | | EP 1096592 | HCAPLUS |
| Anon | 2001 | | | JP 2001126761 A | HCAPLUS |
| Anon | 2002 | | | EP 1187245 | HCAPLUS |
| Hatazaki | 2001 | | | US 20010038949 A1 | |
| Iwamoto | 2002 | | | US 20020039677 A1 | |
| Mita | 2001 | | | US 6315918 B1 | HCAPLUS |
| Nakagawa, H | 2000 | | 1 | The Electrochemical | MEDLINE |
| Smart, M | 1999 | | 55 | Battery Conference o | HCAPLUS |
| Sonozaki | 2000 | | | US 6048639 A | HCAPLUS |

L188 ANSWER 12 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:253130 HCAPLUS

DN 136:281940

TI Nonaqueous electrolyte secondary **battery**

IN Sekino, Masahiro; Satoh, Asako; Fujiwara, Masashi; Hasebe, Hiroyuki

PA Kabushiki Kaisha Toshiba, Japan

SO Eur. Pat. Appl., 33 pp.

CODEN: EPXXDW

DT **Patent**

LA English

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|--------------|
| PI | EP 1193788 | A2 | 20020403 | EP 2001-308138 | 20010925 <-- |
| | EP 1193788 | A3 | 20040107 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | CN 1347166 | A | 20020501 | CN 2001-132663 | 20010907 <-- |
| PRAI | JP 2000-296074 | A | 20000928 | <-- | |

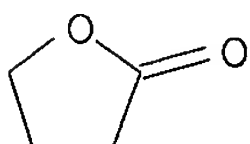
AB Disclosed is a nonaq. electrolyte secondary **battery**, characterized by comprising a nonaq. electrolyte containing ethylene carbonate and γ -butyrolactone, wherein, when a charge-discharge cycle test satisfying conditions (A) to (D) given below is performed under an environment of 45°, the capacity retention rate at 100-th charge-discharge cycle is at least 85% based on the discharge capacity in the first charge-discharge cycle, (A) for the charging, the constant current-constant voltage charging to 4.2 V is performed for 3 h under a current of 1 C, (B) the discharging is performed to 3 V under a current of 1 C, (C) after the charging, the secondary **battery** is left to stand for 10 min, followed by performing the discharging, and (D) after the discharging, the secondary **battery** is left to stand for 10 min, followed by performing the charging.

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 110-00-9, Furan 534-22-5, 2-Methylfuran 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary **battery**)

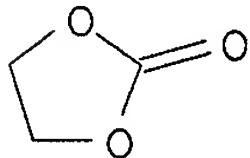
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



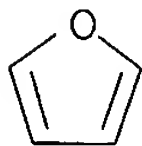
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS

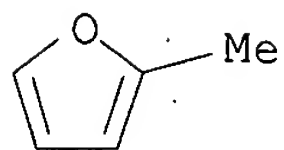
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS

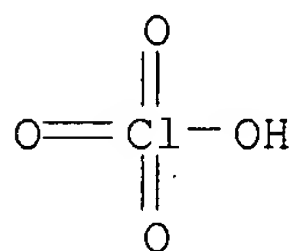
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)

②



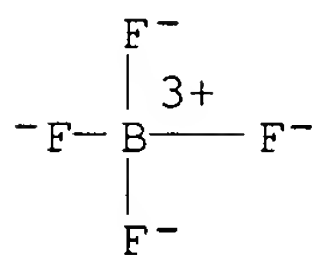
②

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

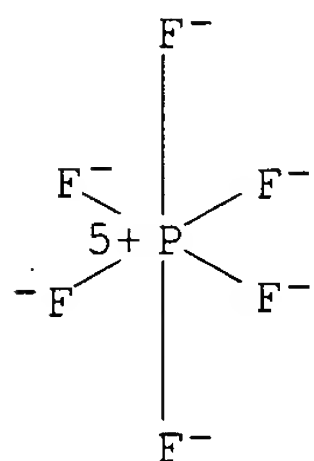


● Li

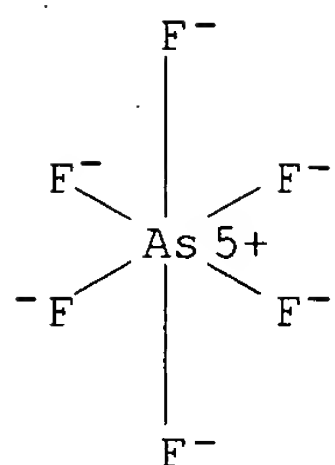
RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

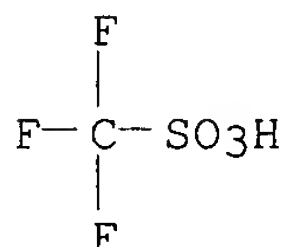
RN 29935-35-1 HCAPLUS
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 33454-82-9 HCAPLUS

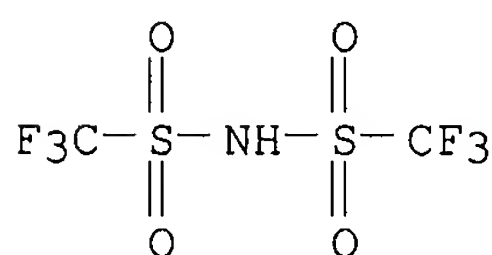
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

L188 ANSWER 13 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:193254 HCAPLUS

DN 136:234657

TI Manufacture of electrode by heat treatment for secondary polymer battery

IN Harada, Manabu; Nishiyama, Toshihiko; Kamito, Hiroyuki; Kurosaki, Masato; Nakagawa, Yuji; Mitani, Katsuya; Yoshida, Shinya; Shinoda, Tomoki

PA NEC Corp., Japan; NEC Tokin Corp.

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 2002075333 | A | 20020315 | JP 2000-267388 | 20000904 <-- |
| | JP 3581304 | B2 | 20041027 | | |
| PRAI | JP 2000-267388 | | 20000904 | <-- | |

AB The electrode is manufactured by forming a film containing a conductive aid and polymer active mass and then heating at temperature lower than carbonization temperature of the polymer. The electrode may be free from a binder. Claimed battery is equipped with the above electrode through a separator impregnated with an electrolyte solution or an electrolyte. The battery has high capacity, long cycle life, and low impedance.

IT 82451-55-6, Polyindole

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(cathode; polymer-containing electrode manufactured by heat treatment for secondary polymer battery)

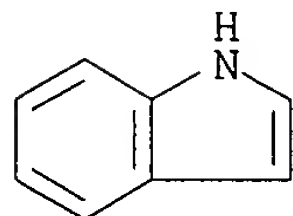
RN 82451-55-6 HCAPLUS

CN 1H-Indole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 120-72-9

CMF C8 H7 N



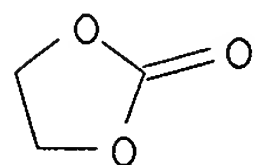
(3)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate

RL: DEV (Device component use); USES (Uses)
(electrolyte solvent; polymer-containing electrode manufactured by heat treatment for secondary polymer battery)

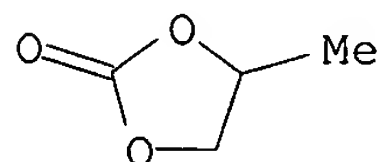
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

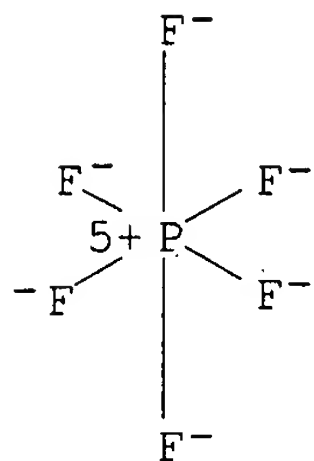


IT 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)
(electrolyte; polymer-containing electrode manufactured by heat treatment

for

secondary polymer battery)
 RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

L188 ANSWER 14 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2002:163800 HCAPLUS
 DN 136:219519
 TI Phenyl boron-based compounds as anion receptors for nonaqueous
battery electrolytes
 IN Lee, Hung Sui; Yang, Xiao-qing; McBreen, James; Sun, Xuehui
 PA Brookhaven Science Associates, Llc, USA
 SO U.S., 15 pp., Cont.-in-part of U. S. 6,022,643.
 CODEN: USXXAM
 DT **Patent**
 LA English
 FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | US 6352798 | B1 | 20020305 | US 2000-492569 | 20000127 <-- |
| | US 6022643 | A | 20000208 | US 1997-986846 | 19971208 <-- |
| PRAI | US 1997-986846 | A2 | 19971208 | <-- | |

OS MARPAT 136:219519

AB Novel fluorinated boronate-based compds. which act as anion receptors in nonaq. **battery** electrolytes are provided. When added to nonaq. **battery** electrolytes, the fluorinated boronate-based compds. of the invention enhance ionic conductivity and cation transference number of nonaq.

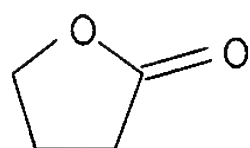
electrolytes. The fluorinated boronate-based anion receptors include different fluorinated alkyl and aryl groups.

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 534-22-5, 2-Methylfuran 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 12057-17-9, Lithium manganese oxide LiMn_2O_4 12190-79-3, Cobalt lithium oxide CoLiO_2 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate

RL: DEV (Device component use); USES (Uses)
(Ph boron-based compds. as anion receptors for nonaq. **battery**
electrolytes)

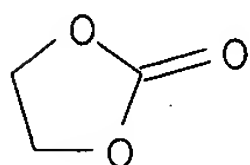
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



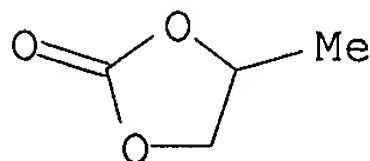
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



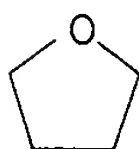
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



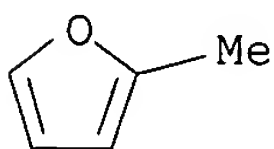
RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS

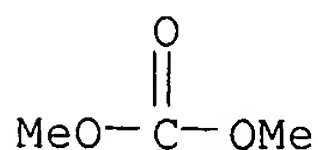
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



(2)

RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

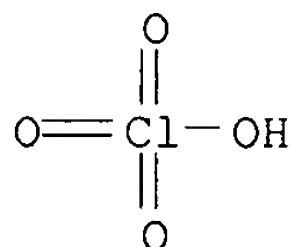
RN 7447-41-8 HCAPLUS
 CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

RN 7550-35-8 HCAPLUS
 CN Lithium bromide (LiBr) (9CI) (CA INDEX NAME)

Br-Li

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 10377-51-2 HCAPLUS
 CN Lithium iodide (LiI) (9CI) (CA INDEX NAME)

I-Li

RN 12057-17-9 HCAPLUS
 CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

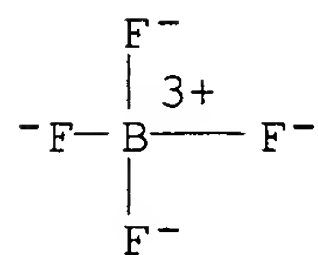
| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 4 | 17778-80-2 |
| Mn | 2 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

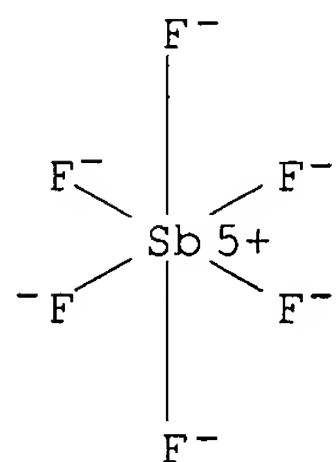
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

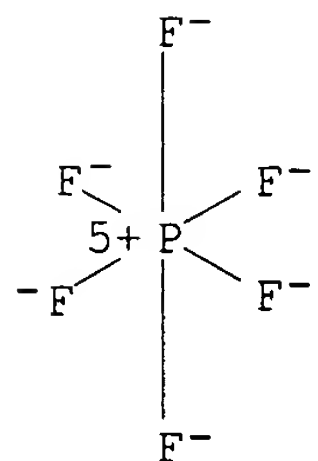
RN 18424-17-4 HCAPLUS

CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

● Li⁺

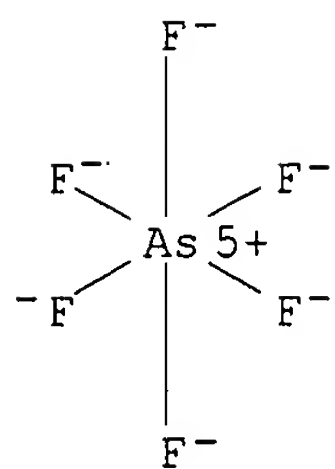
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Anon | 1991 | | | DE 4014488 A | HCAPLUS |
| Anon | 1993 | | | JP 05148259 A | HCAPLUS |
| Conroy | 1970 | 9 | 2739 | "A Series of 1,3-Dio | |

L188 ANSWER 15 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:103441 HCAPLUS

DN 136:153869

TI **Lithium-sulfur batteries** with high capacity and good rate capability

IN Jung, Yongju; Kim, Seok; Choi, Yunsuk; Choi, Soo Seok; Lee, Jeawoan; Hwang, Duck Chul; Kim, Joo Soak

PA **Samsung SDI Co., Ltd., S. Korea**

SO Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DT **Patent**

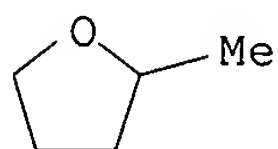
LA English

FAN.CNT 1

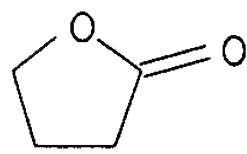
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|--------------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | EP 1178555 | A2 | 20020206 | EP 2001-117788 | 20010802 <-- |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | KR 2002011562 | A | 20020209 | KR 2000-44900 | 20000802 <-- |
| | KR 2002011563 | A | 20020209 | KR 2000-44901 | 20000802 <-- |
| | JP 2002075446 | A | 20020315 | JP 2001-213286 | 20010713 <-- |
| | US 2002045102 | A1 | 20020418 | US 2001-918463 | 20010801 <-- |
| | CN 1336696 | A | 20020220 | CN 2001-132527 | 20010802 <-- |
| PRAI | KR 2000-44900 | A | 20000802 | <-- | |
| | KR 2000-44901 | A | 20000802 | <-- | |

AB A **lithium-sulfur battery** includes a neg. electrode, a pos. electrode, and an **electrolyte**. The neg. electrode includes a neg. active material selected from materials in which **lithium** intercalation reversibly occur, **lithium** alloy or **lithium** metal. The pos. electrode includes at least one of elemental sulfur and organosulfur compds. for a pos. active material, and an elec. conductive material. The **electrolyte** includes at least two groups selected from a weak polar **solvent** group, a strong polar **solvent** group and a **lithium** protection **solvent** group, where the **electrolyte** includes at least one or more **solvents** selected from the same group. The **electrolyte** may optionally

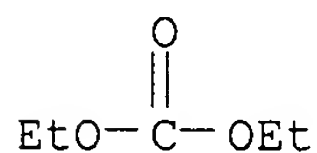
include one or more **electrolyte** salts.
 IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,
 γ -Butyrolactone 105-58-8, Diethyl carbonate
 108-88-3, Toluene, uses 109-99-9, Thf, uses
 110-00-9, Furan 126-33-0, Sulfolane 534-22-5,
 2-Methylfuran 616-38-6, Dimethyl carbonate 625-86-5,
 2,5-Dimethylfuran 1330-20-7, Xylene, uses 7439-93-2,
 Lithium, uses 7791-03-9, Lithium perchlorate
 14283-07-9, Lithium tetrafluoroborate 21324-40-3
 , Lithium hexafluorophosphate 33454-82-9,
 Lithium triflate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (lithium-sulfur **batteries** with high capacity and
 good rate capability)
 RN 96-47-9 HCAPLUS
 CN Furan, tetrahydro-2-methyl- (8CI, 9CI) (CA INDEX NAME)



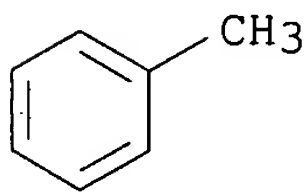
RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



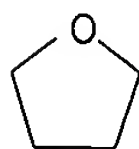
RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



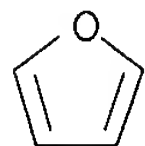
RN 108-88-3 HCAPLUS
 CN Benzene, methyl- (9CI) (CA INDEX NAME)



RN 109-99-9 HCAPLUS
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)

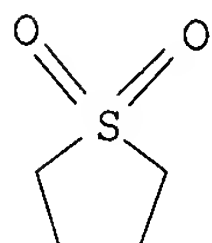


RN 110-00-9 HCAPLUS
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

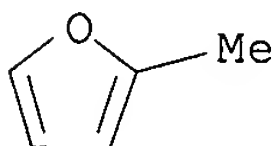


(2)

RN 126-33-0 HCAPLUS
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)

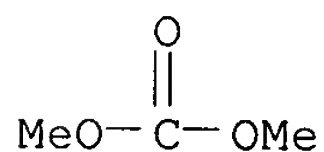


RN 534-22-5 HCAPLUS
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)

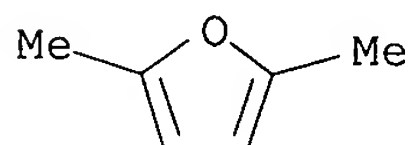


(2)

RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

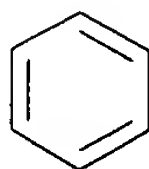


RN 625-86-5 HCAPLUS
CN Furan, 2,5-dimethyl- (6CI, 8CI, 9CI) (CA INDEX NAME)



(2)

RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (9CI) (CA INDEX NAME)

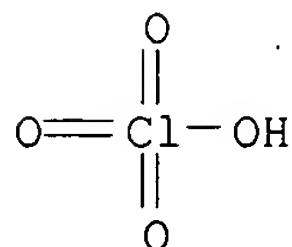


2 (D1-Me)

RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

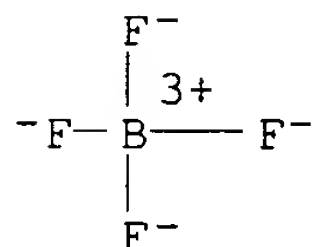
Li

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



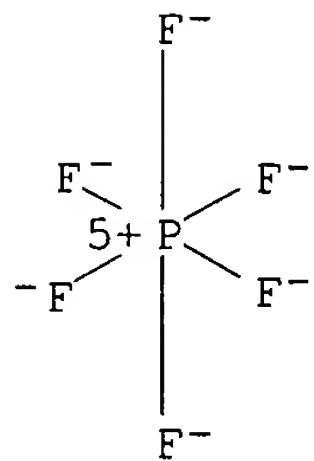
● Li

RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

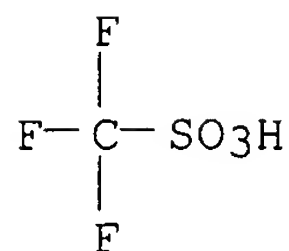
RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 33454-82-9 HCAPLUS

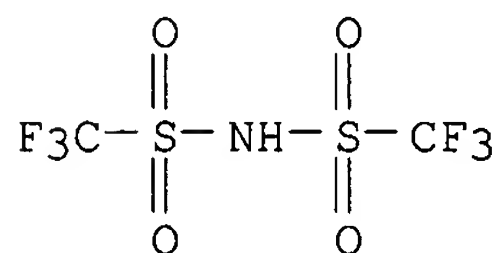
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 74432-42-1, Lithium polysulfide

RL: TEM (Technical or engineered material use); USES (Uses)
(lithium-sulfur batteries with high capacity and
good rate capability)

RN 74432-42-1 HCAPLUS

CN Lithium sulfide (Li₂(S_x)) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L188 ANSWER 16 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:850854 HCAPLUS

DN 135:374181

TI Method of manufacturing a polymer gel electrolyte battery or capacitor

IN Sato, Takaya; Shimizu, Tatsuo

PA Nisshinbo Industries, Inc., Japan; Itochu Corporation

SO Eur. Pat. Appl., 24 pp.

CODEN: EPXXDW

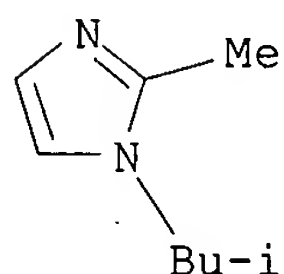
DT Patent

LA English

FAN.CNT 1

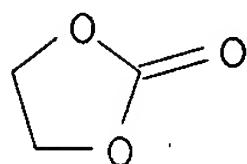
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|--------------|
| PI | EP 1156547 | A1 | 20011121 | EP 2001-111816 | 20010515 <-- |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2001325991 | A | 20011122 | JP 2000-141687 | 20000515 <-- |
| | CA 2347408 | A1 | 20011115 | CA 2001-2347408 | 20010511 <-- |
| | US 2002042986 | A1 | 20020418 | US 2001-853050 | 20010511 <-- |
| | US 6793692 | B2 | 20040921 | | |
| | SG 100695 | A1 | 20031226 | SG 2001-2795 | 20010511 <-- |

CN 1324117 A 20011128 CN 2001-116134 20010515 <--
 TW 512556 B 20021201 TW 2001-90111551 20010515 <--
 EP 1300904 A1 20030409 EP 2003-421 20010515 <--
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, LT, LV, FI, RO, MK, CY, AL, TR
 US 2004001302 A1 20040101 US 2003-607956 20030627 <--
 PRAI JP 2000-141687 A 20000515 <--
 US 2001-853050 A3 20010511 <--
 EP 2001-111816 A3 20010515 <--
 AB The invention discloses a method for manufacturing an elec. component, in which
 ions migrate between electrodes and which provides high efficiency. In
 the method for manufacturing an elec. component, in which ions migrate between
 electrodes, an ion conductive polymer layer dissolving ions is formed on
 an electrode material layer of at least one of a pair of electrode
 structures which comprise an electrode material layer formed on a current
 collector. The pair of electrode structures are arranged at opposed
 positions with the current collector facing outward, and this arrangement
 is accommodated in an accommodation unit, and liquid electrolyte is injected
 into the accommodation unit.
 IT 116680-33-2, NC-IM
 RL: CAT (Catalyst use); USES (Uses)
 (method of manufacturing polymer gel electrolyte battery or capacitor)
 RN 116680-33-2 HCAPLUS
 CN 1H-Imidazole, 2-methyl-1-(2-methylpropyl)- (9CI) (CA INDEX NAME)

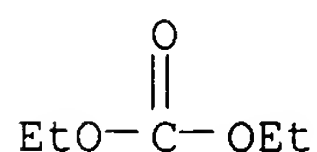


6

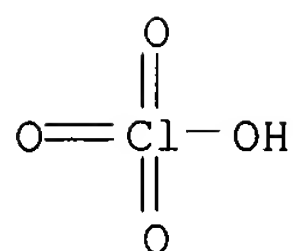
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 7791-03-9, Lithium perchlorate 12190-79-3,
 Cobalt lithium oxide colio2
 RL: DEV (Device component use); USES (Uses)
 (method of manufacturing polymer gel electrolyte battery or capacitor)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

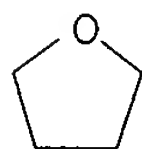


● Li

RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO₂) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

IT 109-99-9, Thf, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method of manufacturing polymer gel electrolyte battery or capacitor)
 RN 109-99-9 HCAPLUS
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Anon | 1997 | 1997 | | PATENT ABSTRACTS OF | |
| Basf Ag | 2000 | | | DE 19830993 A | HCAPLUS |
| Clericuzio, M | 1995 | 82 | 179 | SOLID STATE IONICS | |
| Koninkl Philips Electro | 1999 | | | WO 9949531 A | HCAPLUS |
| Nisshinbo Ind Inc | 1996 | | | JP 08225626 A | HCAPLUS |
| Osaka, T | 1998 | 74 | 122 | JOURNAL OF POWER SOU | HCAPLUS |
| Sony Corp | 2000 | | | EP 1041658 A | HCAPLUS |
| Sony Corporation | 2000 | | | WO 0013252 A | HCAPLUS |

L188 ANSWER 17 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:847742 HCAPLUS

DN 136:9010

TI Solid polymer electrolyte

IN Ogawa, Noriyoshi; Kanekawa, Tatsuya

PA Mitsubishi Gas Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
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| | ----- | ---- | ----- | ----- | ----- |
| PI | JP 2001325990 | A | 20011122 | JP 2000-141683 | 20000515 <-- |

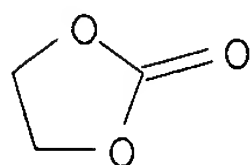
PRAI JP 2000-141683
GI

20000515 <--

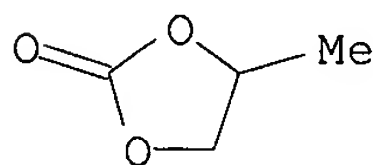
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The electrolyte contains an ionizable Group I or Group II metal salt and a copolymer, having limiting viscosity 0.2-2.0 dL/g, and containing repeating units I (R1-4 = H, C1-10 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, or C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; X = -(CR5R6)n-, -S-, -SO2-, -O-, -CO-, -SO-, II, or III; R5-6 = H, C1-10 alkyl, C6-12 aryl, C2-5 alkenyl, or C1-5 alkoxy groups that may contain C1-5 alkyl, C2-5 alkenyl or C1-5 alkoxy substituents, or R5 and R6 joined to form a (heterocyclic) ring; R7-8 = H, C1-10 alkyl, C2-10 alkenyl, C1-10 alkoxy, or C6-12 aryl group; a = 0-20 integer) and 20-70 mol% IV (R9-10 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; R11-14 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; R15 = C1-6 alkylene group, alkylidene group, or single bond; Y = polymer or random copolymer of -SiR16R17O- and/or -SiR18R19O- having d.p. 0-200, R16-19 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents). The electrolyte is useful for batteries.

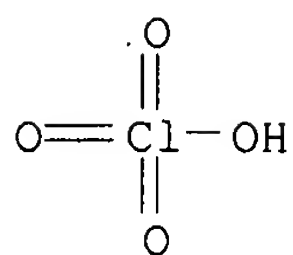
IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **7791-03-9**, **Lithium** perchlorate
RL: DEV (Device component use); USES (Uses)
(comps. of solid polymer electrolyte containing carbonate ester-siloxane copolymer for secondary **lithium** batteries)
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

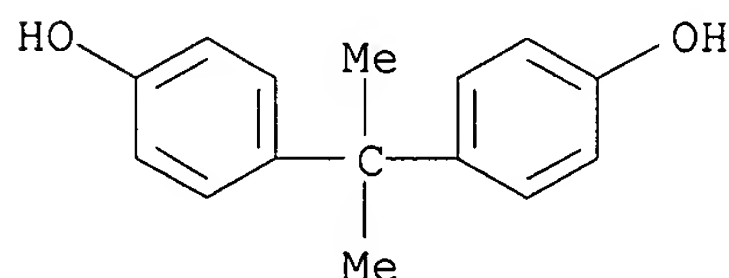


RN 7791-03-9 HCAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



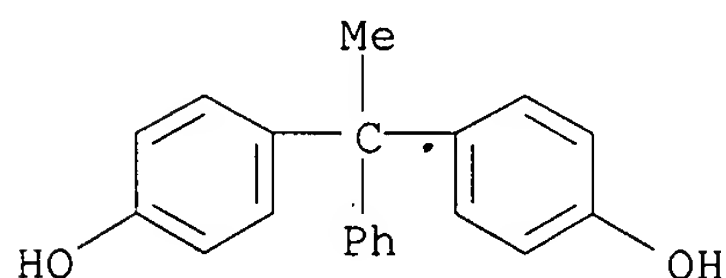
● Li

IT 80-05-7, 2,2-Bis(4-hydroxyphenyl)propane, processes
 1571-75-1, 1,1-Bis(4-hydroxyphenyl)-1-phenyl ethane
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (in manufacture of solid polymer electrolyte containing carbonate
 ester-siloxane
 copolymer for secondary lithium batteries)
 RN 80-05-7 HCAPLUS
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



(1)

RN 1571-75-1 HCAPLUS
 CN Phenol, 4,4'-(1-phenylethylidene)bis- (9CI) (CA INDEX NAME)

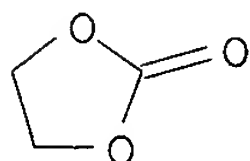


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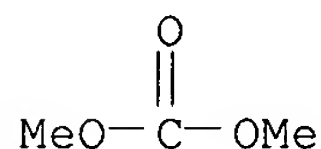
L188 ANSWER 18 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2001:780530 HCAPLUS
 DN 135:320525
 TI Nonaqueous electrolyte secondary battery
 IN Nirasawa, Takao; Ito, Hidetoshi; Omaru, Atsuo
 PA Sony Corp., Japan
 SO Eur. Pat. Appl., 17 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|--------------|
| PI | EP 1148570 | A2 | 20011024 | EP 2001-109161 | 20010412 <-- |
| | EP 1148570 | A3 | 20040908 | | |
| | EP 1148570 | B1 | 20060607 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2002008720 | A | 20020111 | JP 2000-333571 | 20001031 <-- |

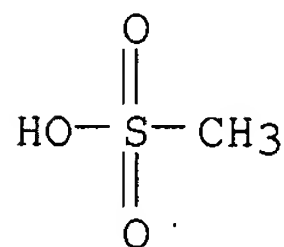
TW 490876 B 20020611 TW 2001-90108532 20010410 <--
 CN 1322028 A 20011114 CN 2001-121439 20010418 <--
 US 2002018940 A1 20020214 US 2001-837847 20010418 <--
 US 6913856 B2 20050705
 US 2005208385 A1 20050922 US 2005-111401 20050421 <--
 PRAI JP 2000-122417 A 20000418 <--
 JP 2000-333571 A 20001031 <--
 US 2001-837847 A1 20010418 <--
 AB A nonaq. electrolyte secondary battery includes a pos. electrode having a
 pos. electrode active material, a neg. electrode containing a neg. electrode
 active material capable of being doped/undoped with **lithium**, and
 a nonaq. electrolyte. The nonaq. electrolyte contains at least one of
 thiols, thiophenes, thioanisoles, thiazoles, thioacetates, aromatic sulfones,
 and the derivs. thereof. The capacity of the battery is not significantly
 degraded after cycling and its cycle life is significantly long.
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
 2550-62-1, Methanesulfonic acid, **lithium** salt
 7447-41-8, **Lithium** chloride, uses 7550-35-8,
Lithium bromide 7791-03-9, **Lithium** perchlorate
 12190-79-3, Cobalt **lithium** oxide colio2
 14283-07-9, **Lithium** tetrafluoroborate 14485-20-2
 , **Lithium** tetraphenylborate 21324-40-3,
Lithium hexafluorophosphate 29935-35-1, **Lithium**
 hexafluoroarsenate 33454-82-9, **Lithium** triflate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte secondary battery)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 2550-62-1 HCAPLUS
 CN Methanesulfonic acid, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 7447-41-8 HCAPLUS

CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

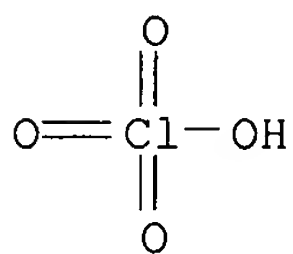
RN 7550-35-8 HCAPLUS

CN Lithium bromide (LiBr) (9CI) (CA INDEX NAME)

Br-Li

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

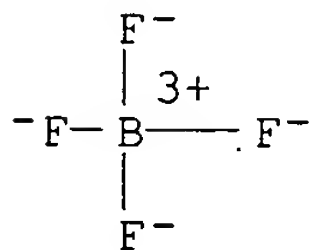
RN 12190-79-3 HCAPLUS

CN Cobalt lithium oxide (CoLiO₂) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | | |
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

RN 14283-07-9 HCAPLUS

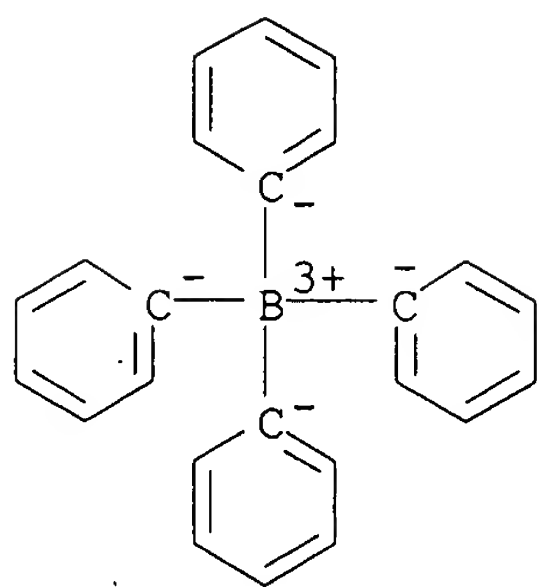
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

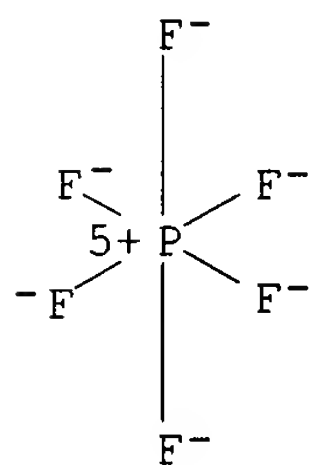
RN 14485-20-2 HCAPLUS

CN Borate(1-), tetraphenyl-, lithium (8CI, 9CI) (CA INDEX NAME)



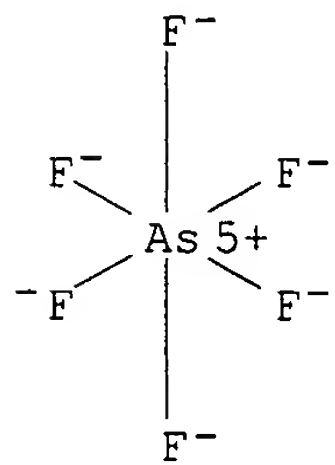
● Li^+

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li^+

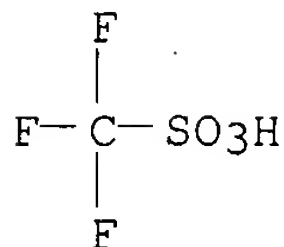
RN 29935-35-1 HCAPLUS
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li^+

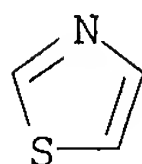
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 288-47-1, Thiazole
RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte secondary battery)
RN 288-47-1 HCAPLUS
CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)



(6)

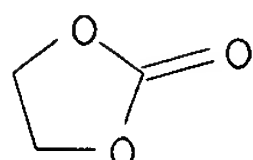
L188 ANSWER 19 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:566868 HCAPLUS
DN 135:139860
TI Electrolytes for dual graphite energy storage system
IN Massaro, Lisa Marie; Lewandowski, Thongkhahn P.; Huang, Sui-Yang; Maclean, Gregory Kenneth; Ellis, Heather N.; Orabone, William E., Jr.
PA Lion Compact Energy, Inc., USA
SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------|--|----------|-----------------|--------------|
| PI | WO 2001056101 | A1 | 20010802 | WO 2001-US2533 | 20010126 <-- |
| | W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| | RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |
| | CA 2365631 | A1 | 20010802 | CA 2001-2365631 | 20010126 <-- |
| | AU 2001031161 | A5 | 20010807 | AU 2001-31161 | 20010126 <-- |
| | EP 1183746 | A1 | 20020306 | EP 2001-903331 | 20010126 <-- |
| | R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | |
| | JP 2003520687 | T | 20030708 | JP 2001-554826 | 20010126 <-- |
| | JP 2003521102 | T | 20030708 | JP 2001-555155 | 20010126 <-- |
| PRAI | US 2000-178177P | P | 20000126 | <-- | |
| | US 2000-178217P | P | 20000126 | <-- | |

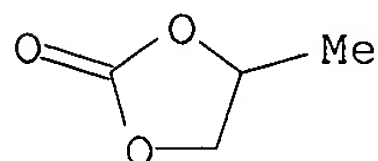
US 2000-178241P P 20000126 <--
 WO 2001-US2533 W 20010126 <--
 WO 2001-US2634 W 20010126 <--

AB There is provided an electrolyte recirculation system including a salt concentration monitor, a pump, and a salt reservoir. Also provided by the present invention is an electrolyte for use in a dual graphite cell, the electrolyte being made of a solvent that dissolves at least 15 weight% salt. There is also provided an electrolyte for use in a dual graphite cell, the electrolyte stable above 5 V. Also provided is an electrolyte for use in a dual graphite cell, the electrolyte including a multiple solvent electrolyte that dissolves in at least 15 weight% LiClO₄.

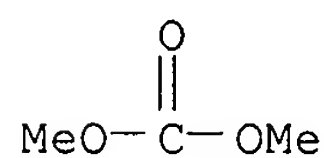
IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **616-38-6**, Dimethyl carbonate **623-53-0**, Ethyl methyl carbonate **7791-03-9**, **Lithium** perchlorate **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate **33454-82-9**, **Lithium** triflate
 RL: DEV (Device component use); USES (Uses)
 (electrolytes for dual graphite energy storage system)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



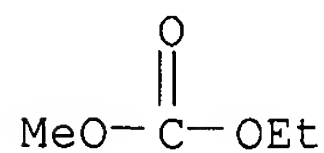
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



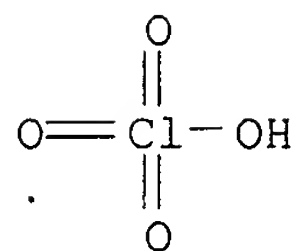
RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



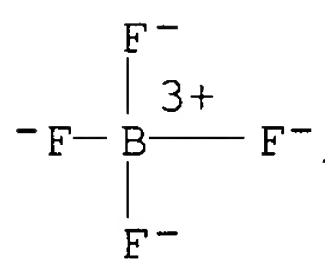
RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

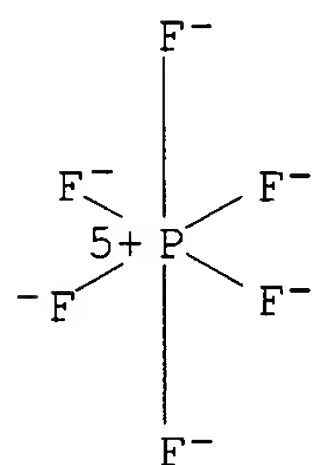
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

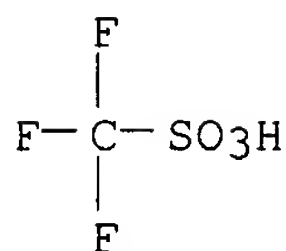
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

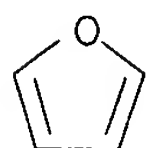
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 110-00-9, furan
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolytes for dual graphite energy storage system)
 RN 110-00-9 HCAPLUS
 CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



(2)

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| McCullough | 1989 | | | US 4830938 A | HCAPLUS |
| McCullough | 1989 | | | US 4865931 A | HCAPLUS |
| McCullough | 1996 | | | US 5518836 A | HCAPLUS |
| McCullough | 1996 | | | US 5532083 A | HCAPLUS |

L188 ANSWER 20 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:449916 HCAPLUS

DN 135:45792

TI Methods of purifying organic **lithium** salts

IN Gorkovenko, Alexander; Soloveichik, Grigorii L.

PA Moltech Corporation, USA

SO U.S., 16 pp., Cont.-in-part of U.S. Ser. No. 127,468, abandoned.

CODEN: USXXAM

DT **Patent**

LA English

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|--------------|
| PI | US 6248883 | B1 | 20010619 | US 1998-205873 | 19981204 <-- |
| | WO 2000006538 | A1 | 20000210 | WO 1999-US17347 | 19990729 <-- |
| | W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | AU 9953293 | A1 | 20000221 | AU 1999-53293 | 19990729 <-- |
| PRAI | US 1998-127468 | B2 | 19980731 | <-- | |
| | US 1998-205873 | A | 19981204 | <-- | |

WO 1999-US17347 W 19990729 <--

AB Provided are methods of purification of an organic **lithium** salt comprising the steps of: (a) dissolving an impure organic **lithium** salt in a solution comprising an organic complexing solvent; (b) crystallizing from

said solution a solid solvate complex comprising said **lithium** salt and said organic complexing solvent; (c) separating said solid solvate complex from said solution; (d) dissociating said solid solvate complex to yield: (i) said **lithium** salt in a solid form, and, (ii) a volatile composition comprising said organic complexing solvent; and, (e) removing said volatile composition to yield said **lithium** salt in a solid form of purity greater than the purity of said impure **lithium** salt. The present invention also pertains to electrolytes for elec. current producing cells comprising such purified **lithium** salts. Thus, (CF₃SO₂)₂NLi was purified by crystallization of the 1,4-dioxane complex and heating under vacuum at 125° to remove the dioxane.

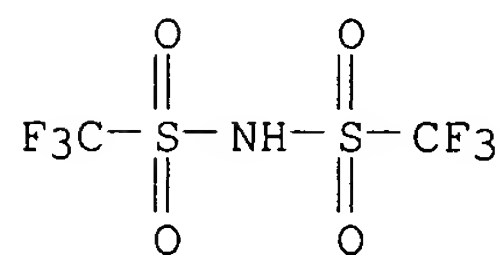
IT 90076-65-6P, **Lithium** bis(trifluoromethylsulfonyl)imide

RL: DEV (Device component use); PUR (Purification or recovery); PREP (Preparation); USES (Uses)

(purification by crystallization of ether complex for use as **battery** electrolyte)

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

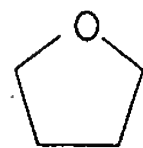
IT 109-99-9, Tetrahydrofuran, reactions 110-00-9, Furan

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(purification of organic **lithium** salts by ether complexation, crystallization and removal)

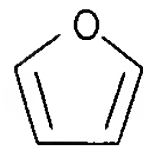
RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

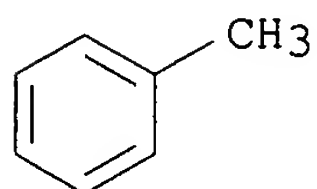


2

IT 7439-93-2DP, Lithium, salts, preparation
 RL: PUR (Purification or recovery); PREP (Preparation)
 (purification of organic lithium salts by ether complexation,
 crystallization
 and removal)
 RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT 108-88-3, Toluene, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent for purification of organic lithium salts by ether
 complexation, crystallization and removal)
 RN 108-88-3 HCAPLUS
 CN Benzene, methyl- (9CI) (CA INDEX NAME)



RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== |
| Anon | 1994 | | | FR 2698631 | HCAPLUS |
| Anon | 1997 | | | JP 09255685 | HCAPLUS |
| Armand | 1985 | | | US 4505997 | HCAPLUS |
| Bowden | 1982 | | | US 4321314 | HCAPLUS |
| Bowden | 1989 | | | US 4880714 | HCAPLUS |
| Brouillette | 1998 | 27 | 151 | J Solution Chem | HCAPLUS |
| Choquette | 1998 | 145 | 3500 | J Electrochem Soc | HCAPLUS |
| Cotton | 1972 | | 199 | Advanced Inorganic C | MEDLINE |
| Couture | 1996 | 74 | 153 | Can J Chem | HCAPLUS |
| Dominey | 1987 | | | Novel Stable, Non-Co | |
| Kita | 1997 | 68 | 307 | J Power Sources | HCAPLUS |
| Krause | 1997 | 68 | 320 | J Power Sources | HCAPLUS |
| Lamanna | 1997 | | | US 5652072 | HCAPLUS |
| Langer | 1975 | | | US Re28456 | |
| Laverdure | 1988 | | 692 | Proceedings of the S | HCAPLUS |
| Lee | 1996 | | | US 5538812 | HCAPLUS |
| Luehrs | 1976 | | | US 3977900 | HCAPLUS |
| Nalewajek | 1990 | | | US 4895778 | HCAPLUS |
| Newman | 1981 | | | US 4308324 | HCAPLUS |
| Olsher | 1991 | 91 | 137 | Chem Rev | HCAPLUS |
| Pacey | 1987 | | | US 4659815 | HCAPLUS |
| Pedersen | 1971 | | | US 3562295 | |
| Pedersen | 1972 | | | US 3687978 | |
| Pedersen | 1976 | | | US 3987061 | HCAPLUS |
| Sandman | 1988 | 89 | 111 | J Crystal Growth | HCAPLUS |
| Stoffel | 1991 | | | US 4994110 | HCAPLUS |
| Waddell | 1996 | | | US 5514493 | HCAPLUS |

L188 ANSWER 21 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

jan delaval - 22 january 2007

AN 2001:46267 HCAPLUS
 DN 134:118341
 TI Secondary nonaqueous electrolyte batteries using improved anodes and electrolytes, and manufacture of the batteries
 IN Maekawa, Yukio
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DT **Patent**
 LA Japanese
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 2001015172 | A | 20010119 | JP 1999-240599 | 19990826 <-- |
| PRAI | JP 1999-118296 | A | 19990426 | <-- | |

AB Secondary nonaq. electrolyte batteries have cathode sheets containing **Li**-containing mixed rare earth oxides as active materials, anode sheets containing **Li**-intercalatable C materials and having auxiliary layers bonded to **Li**-based metal foils, and nonaq. electrolytes containing **Li** salts and additives selected from hydrazines and aromatic compds. The battery components are assembled and aged for permeation of **Li** into the anodes to give the secondary batteries. The batteries have high capacity.

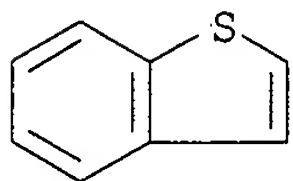
IT **12190-79-3**, Cobalt **lithium** oxide (colio2)
 RL: DEV (Device component use); USES (Uses)
 (cathodes; secondary nonaq. electrolyte batteries using anodes bonded to **Li**-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

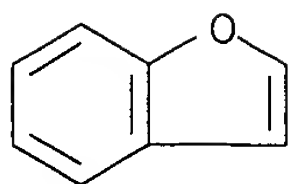
IT **95-15-8**, Benzothiophene **271-89-6**, Benzofuran
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing; secondary nonaq. electrolyte batteries using anodes bonded to **Li**-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

RN 95-15-8 HCAPLUS
 CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



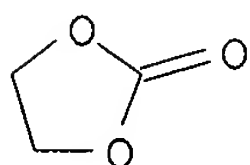
3

RN 271-89-6 HCAPLUS
 CN Benzofuran (6CI, 8CI, 9CI) (CA INDEX NAME)

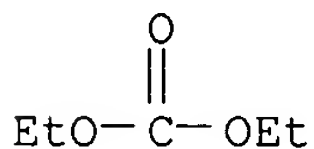


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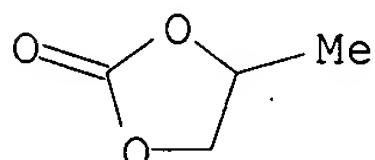
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns.; secondary nonaq. electrolyte batteries using
 anodes bonded to Li-containing foils and electrolytes containing
 hydrazines and/or aromatic compds.)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



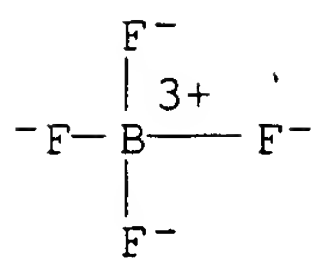
RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



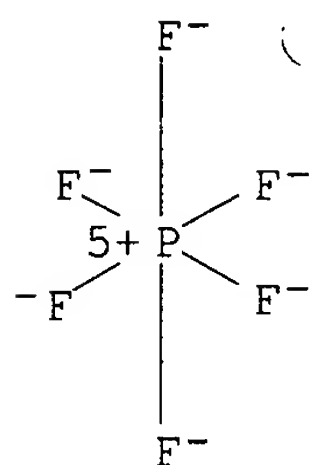
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3
 , Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; secondary nonaq. electrolyte batteries using anodes
 bonded to Li-containing foils and electrolytes containing hydrazines
 and/or aromatic compds.)
 RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

IT 7439-93-2, Lithium, uses
 RL: DEV (Device component use); USES (Uses)
 (foil; secondary nonaq. electrolyte batteries using anodes bonded to
 Li-containing foils and electrolytes containing hydrazines and/or aromatic
 compds.)
 RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

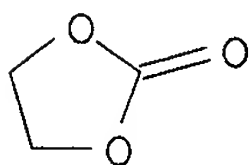
Li

L188 ANSWER 22 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2001:46265 HCAPLUS
 DN 134:118340
 TI Ionic conductors and secondary lithium ion batteries using them
 IN Tsuchiya, Shuji; Nanai, Satonari
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

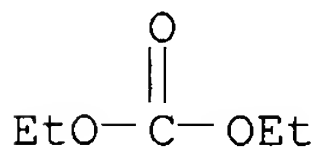
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---------------|------|----------|-----------------|--------------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | JP 2001015166 | A | 20010119 | JP 1999-187276 | 19990701 <-- |

jan delaval - 22 january 2007

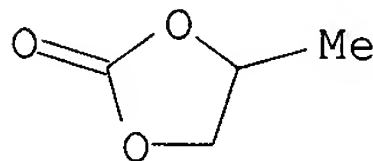
PRAI JP 1999-187276 19990701 <--
 AB Solid or gelled ionic conductors contain (non)ionic polymers, N,N'-disubstituted imidazolium compds. or aromatic group-containing quaternary ammonium compds., and other cations. Secondary Li ion batteries using electrolyte solns. containing the solid or gelled ionic conductors show high ionic conductivity and high capacity.
 IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **108-32-7**, Propylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solution; ionic conductors containing (non)ionic polymers, imidazolium compds. or quaternary ammonium compds., and other cations for secondary Li ion battery electrolytes)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



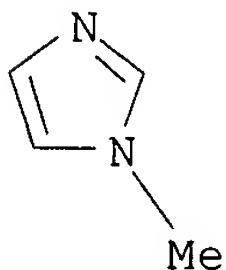
RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT **616-47-7**, 1-Methylimidazole
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of imidazolium compds.; ionic conductors containing (non)ionic polymers, imidazolium compds. or quaternary ammonium compds., and other cations for secondary Li ion battery electrolytes)
 RN 616-47-7 HCAPLUS
 CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



④

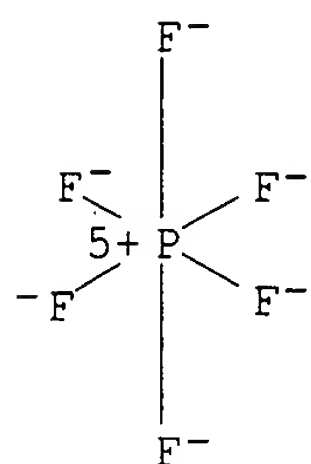
IT **7439-93-2DP**, Lithium, complexes with imidazolium compds. or quaternary ammonium compds. and polymers, uses **21324-40-3DP**, Lithium hexafluorophosphate, complexes with imidazolium compds. or quaternary ammonium compds. and polymers

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
 (ionic conductors containing (non)ionic polymers, imidazolium compds. or quaternary ammonium compds., and other cations for secondary **Li** ion battery electrolytes)

RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



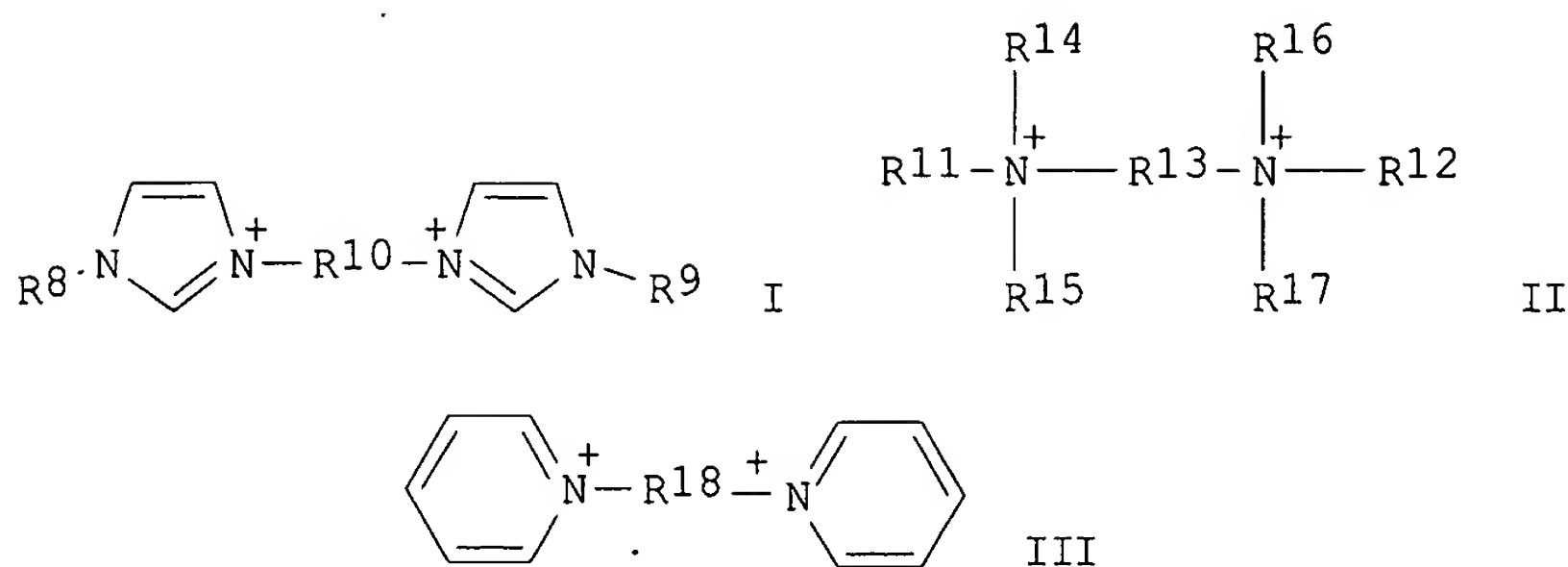
● Li⁺

L188 ANSWER 23 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2000:723536 HCAPLUS
 DN 133:298800
 TI Carbonaceous materials and their manufacture, vanadium oxide derivatives, solid ion conductive electrochemical elements, and secondary nonaqueous electrolyte batteries
 IN Watanabe, Kazuhiro; Nichogi, Katsuhiro; Nanai, Satonari; Miyamoto, Akihito
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 16 pp.
 CODEN: JKXXAF

DT **Patent**
 LA Japanese

FAN.CNT 3

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|--------------|
| PI | JP 2000285921 | A | 20001013 | JP 1999-155011 | 19990602 <-- |
| PRAI | JP 1998-163134 | A | 19980611 | <-- | |
| | JP 1999-16754 | A | 19990126 | <-- | |
| OS | MARPAT 133:298800 | | | | |
| GI | | | | | |



AB The carbonaceous materials are heat treated hardened resin, and are prepared by mixing the resin with an aromatic compds. having 2-10 rings and hardening the mixture. The solid ion electrochem. elements contain cations selected from imidazole radical ion or its derivative, having aliphatic C connected to the

N atoms, quaternary ammonium ion, I (R8 and R9 = substituents having aliphatic C connected directly to N; R10 = aliphatic C containing group), II (R14-R17 = substituents having aliphatic C connected directly to N; R11-R13 = C containing groups which may also contain aromatic groups), III (R18 = substituent containing aliphatic C), and IV (R21 and R22 = substituents having aliphatic C connected directly to N) mixed with other cations, e.g., metal ions selected from alkali metals, alkaline earth, Ag, Cu, and Zn. The batteries use the carbonaceous material for Li intercalating anodes, the conductive material as solid electrolyte, and V oxide derivs., AxV4-zMzO11 or AxByV4-zMzO11 (A and B and M are metals, x ≤, y ≤4, and z ≤4) for cathodes.

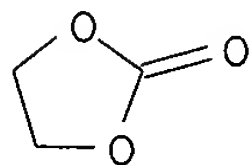
IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **616-47-7D**, 1-Methylimidazole, reaction products with dibromo hydrocarbons **21324-40-3**, **Lithium** hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing quaternary ammonium salts and other salts for secondary **lithium** batteries)

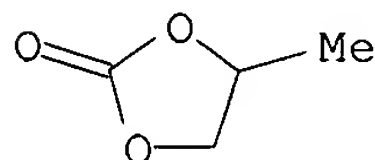
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



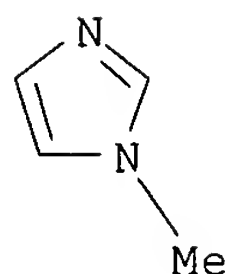
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



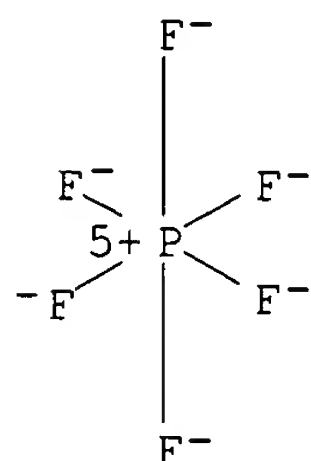
RN 616-47-7 HCAPLUS

CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



6

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

IT 301358-95-2, Copper lithium vanadium oxide
 (CuLi1.8V4O11) 301358-97-4, Lithium vanadium oxide
 (Li1.8V4O11) 301359-02-4, Copper lithium molybdenum
 vanadium oxide (Cu2Li0.5Mo0.2V3.8O11)
 RL: DEV (Device component use); USES (Uses)
 (substituted copper vanadium oxide cathodes for secondary solid
 electrolyte lithium batteries with carbonaceous anodes)
 RN 301358-95-2 HCAPLUS
 CN Copper lithium vanadium oxide (CuLi1.8V4O11) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 11 | 17778-80-2 |
| V | 4 | 7440-62-2 |
| Cu | 1 | 7440-50-8 |
| Li | 1.8 | 7439-93-2 |

RN 301358-97-4 HCAPLUS
 CN Lithium vanadium oxide (Li1.8V4O11) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 11 | 17778-80-2 |
| V | 4 | 7440-62-2 |
| Li | 1.8 | 7439-93-2 |

RN 301359-02-4 HCAPLUS
 CN Copper lithium molybdenum vanadium oxide (Cu2Li0.5Mo0.2V3.8O11) (9CI) (CA INDEX NAME)

| | | |
|-----------|-------|-----------|
| Component | Ratio | Component |
|-----------|-------|-----------|

| | | Registry Number |
|----|-----|-----------------|
| O | 11 | 17778-80-2 |
| V | 3.8 | 7440-62-2 |
| Cu | 2 | 7440-50-8 |
| Mo | 0.2 | 7439-98-7 |
| Li | 0.5 | 7439-93-2 |

L188 ANSWER 24 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2000:665699 HCAPLUS

DN 133:254952

TI Polymer electrolyte for **lithium** secondary batteries

IN Oyama, Noboru

PA Japan

SO Eur. Pat. Appl., 32 pp.

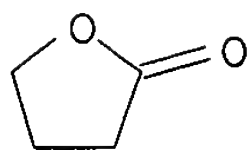
CODEN: EPXXDW

DT **Patent**

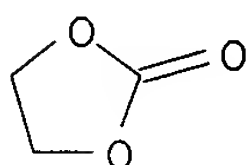
LA English

FAN.CNT 1

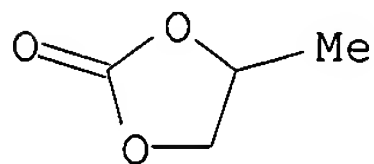
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|--------------|
| PI | EP 1037294 | A2 | 20000920 | EP 2000-105773 | 20000317 <-- |
| | EP 1037294 | A3 | 20030730 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2001189166 | A | 20010710 | JP 2000-70790 | 20000314 <-- |
| | CA 2301414 | A1 | 20000917 | CA 2000-2301414 | 20000316 <-- |
| | US 6509122 | B1 | 20030121 | US 2000-527569 | 20000316 <-- |
| | CN 1267683 | A | 20000927 | CN 2000-104319 | 20000317 <-- |
| | AU 770639 | B2 | 20040226 | AU 2000-22331 | 20000317 <-- |
| | US 2003082458 | A1 | 20030501 | US 2002-227532 | 20020826 <-- |
| | US 7105254 | B2 | 20060912 | | |
| PRAI | JP 1999-71758 | A | 19990317 | <-- | |
| | JP 1999-295503 | A | 19991018 | <-- | |
| | US 2000-527569 | A3 | 20000316 | <-- | |
| AB | A polymer electrolyte providing lithium secondary batteries in which growth of lithium dendrites is suppressed and batteries exhibiting excellent discharge characteristics in low to high temperature, comprises a polymer gel holding a nonaq. solvent containing an electrolyte. The polymer gel comprises (I) a unit derived from at least one monomer having one copolymerizable vinyl group and (II) a unit derived from at least one compound selected from the group consisting of (II-a) a compound having two acryloyl groups and a (poly)oxyethylene group, (II-b) a compound having one acryloyl group and a (poly)oxyethylene group, and (II-c) a glycidyl ether compound, particularly the polymer gel comprises monomer (I), compound (II-a), and a copolymerizable plasticizing compound | | | | |
| IT | 96-48-0 , γ -Butyrolactone 96-49-1 , Ethylene carbonate 108-32-7 , Propylene carbonate 288-32-4D , Imidazole, alkyl derivative 7439-93-2 , Lithium , uses 7791-03-9 , Lithium perchlorate 14283-07-9 , Lithium tetrafluoroborate 21324-40-3 , Lithium hexafluorophosphate 29935-35-1 , Lithium hexafluoroarsenate 33454-82-9 , Lithium triflate 90076-65-6 131651-65-5 132404-42-3 RL: DEV (Device component use); USES (Uses) (polymer electrolyte for lithium secondary batteries) | | | | |
| RN | 96-48-0 HCAPLUS | | | | |
| CN | 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME) | | | | |



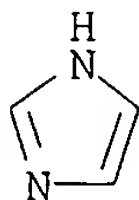
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)

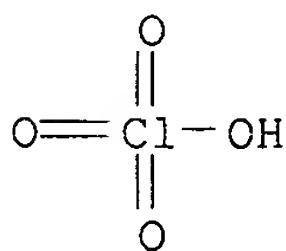


⑥

RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

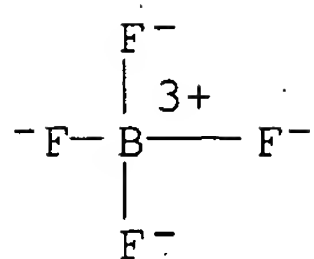
Li

RN 7791-03-9 HCAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



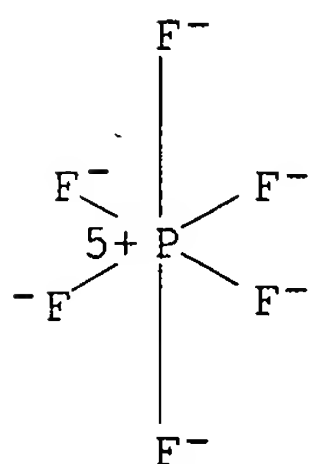
● Li

RN 14283-07-9 HCAPLUS
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li^+

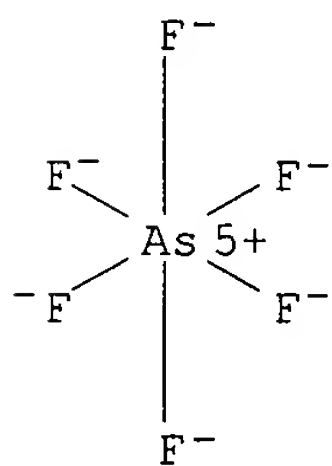
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li^+

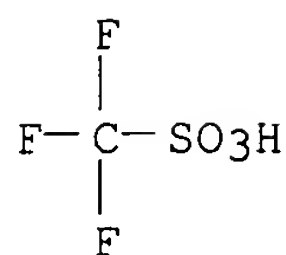
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li^+

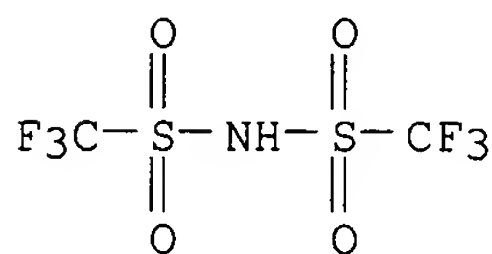
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



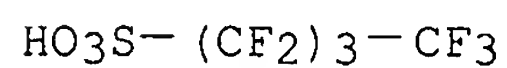
● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)

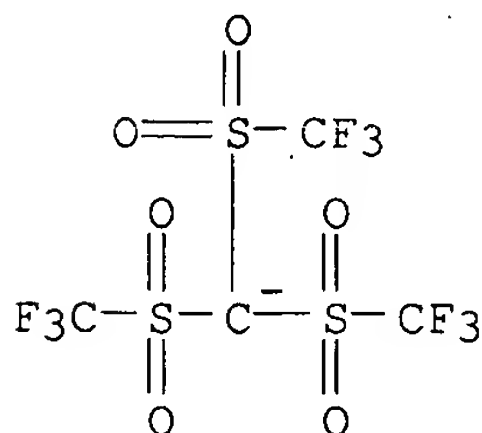
● Li

RN 131651-65-5 HCAPLUS

CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (9CI)
(CA INDEX NAME)

● Li

RN 132404-42-3 HCAPLUS

CN Methane, tris[(trifluoromethyl)sulfonyl]-, ion(1-), lithium (9CI) (CA
INDEX NAME)● Li⁺

L188 ANSWER 25 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2000:377134 HCAPLUS

DN 132:350299

TI Nonaqueous electrolyte batteries

IN Kita, Akinori; Satori, Kotaro; Komaru, Atsuo; Takahashi, Akio

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 27 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 2000156243 | A | 20000606 | JP 1998-328506 | 19981118 <-- |
| PRAI | JP 1998-328506 | | 19981118 | <-- | |

OS MARPAT 132:350299

AB The batteries have a nonaq. electrolyte solution containing an organic compound, which

has a reversible redox potential higher than the potential of the fully charged cathode. Preferably, the organic compound has π orbitals and is selected from (halogenated) derivatives of benzene, biphenyl, naphthalene, naphthalic anhydride containing alkyl, alkoxy, amino, and/or nitro groups and coumarin. The additives improves battery safety.

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3, **Lithium** hexafluorophosphate

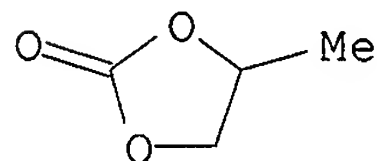
RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte solns. containing aromatic compound additives in secondary

lithium batteries for safety)

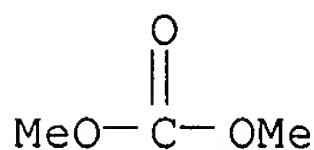
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



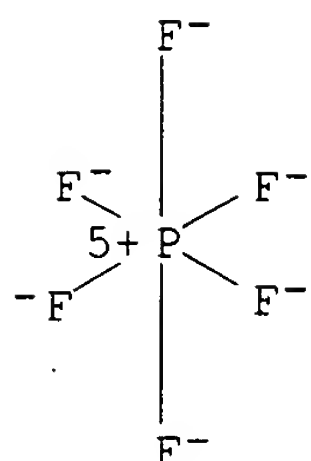
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



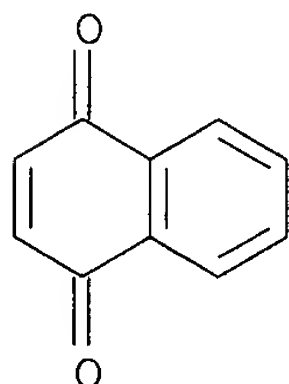
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



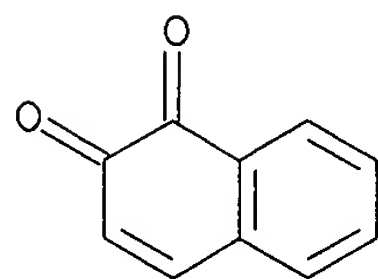
● Li⁺

IT 130-15-4, 1,4-Naphthalenedione 524-42-5,
 1,2-Naphthalenedione
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte solns. containing aromatic compound additives in
 secondary
 lithium batteries for safety)
 RN 130-15-4 HCAPLUS
 CN 1,4-Naphthalenedione (9CI) (CA INDEX NAME)



④

RN 524-42-5 HCAPLUS
 CN 1,2-Naphthalenedione (9CI) (CA INDEX NAME)



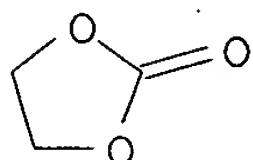
⑤

L188 ANSWER 26 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2000:133026 HCAPLUS
 DN 132:154449
 TI Secondary nonaqueous electrolyte batteries
 IN Takahashi, Masatoshi; Yasutake, Zensaku; Abe, Hiroshi; Ueki, Akira; Takai,
 Tsutomu
 PA Sanyo Electric Co., Ltd., Japan; Ube Industries, Ltd.
 SO Jpn. Kokai Tokkyo Koho, 15 pp.
 CODEN: JKXXAF
 DT Patent

LA Japanese

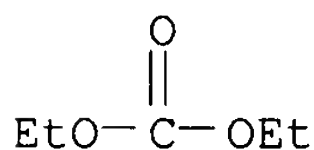
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|--------------|
| PI | JP 2000058117 | A | 20000225 | JP 1998-218001 | 19980731 <-- |
| | JP 2983205 | B2 | 19991129 | | |
| PRAI | JP 1998-218001 | | 19980731 | <-- | |
| OS | MARPAT 132:154449 | | | | |
| AB | The batteries use an electrolyte solution containing a Li salt dissolved in an aromatic ether ROR', where R = C ₆ H ₅ , allyl, or alkylphenyl group; R' = C ₁ -6 alkyl, Ph, allyl, or alkylphenyl group; and R and R' may form a C ₅ -6 ring. | | | | |
| IT | 96-49-1 , Ethylene carbonate 105-58-8 , Diethyl carbonate 616-38-6 , Dimethyl carbonate 623-53-0 , Ethyl methyl carbonate 14283-07-9 , Lithium fluoroborate 21324-40-3 , Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (electrolyte solvents containing aromatic ether derivs. for secondary lithium batteries) | | | | |
| RN | 96-49-1 HCAPLUS | | | | |
| CN | 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME) | | | | |



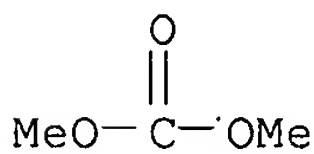
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



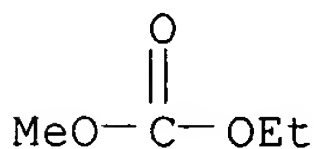
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



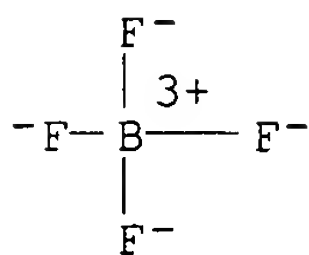
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

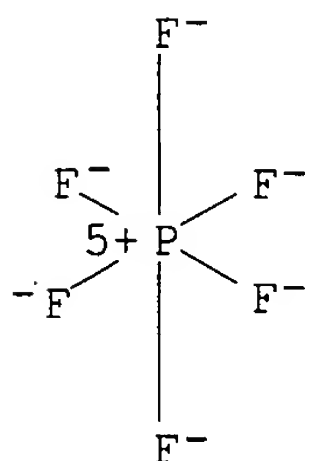


RN 14283-07-9 HCAPLUS

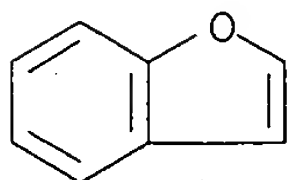
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li⁺

IT 271-89-6, Benzofuran
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solvents containing aromatic ether derivs. for secondary
 lithium batteries)
 RN 271-89-6 HCAPLUS
 CN Benzofuran (6CI, 8CI, 9CI) (CA INDEX NAME)



3

L188 ANSWER 27 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2000:95943 HCAPLUS
 DN 132:125353
 TI Boron compounds as anion binding agents for nonaqueous **battery**
 electrolytes
 IN Lee, Hung Sui; Yang, Xia-oing; McBreen, James; Xiang, Caili
 PA Brookhaven Science Associates, USA
 SO U.S., 11 pp.
 CODEN: USXXAM
 DT **Patent**
 LA English

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | US 6022643 | A | 20000208 | US 1997-986846 | 19971208 <-- |
| | US 6352798 | B1 | 20020305 | US 2000-492569 | 20000127 <-- |
| PRAI | US 1997-986846 | A2 | 19971208 | <-- | |

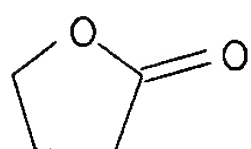
AB Novel fluorinated boron-based compds. which act as anion receptors in nonaq. **battery** electrolytes are provided. The anion receptor is a compound of formula Q3B, where Q is a F-bearing moiety selected from the group of (CF3)2CHO, (CF3)2C(C6H5)O, (CF3)3CO, FC6H4O, F2C6H3O, F4C6HO, C6F5O, CF3C6H4O, and (CF3)2C6H3O. When added to nonaq. **battery** electrolytes, the fluorinated boron-based compds. of the invention enhance ionic conductivity and cation transference number of nonaq. electrolytes. The fluorinated boron-based anion receptors include borane and borate compds. bearing different fluorinated alkyl and aryl groups.

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, uses 534-22-5, 2-Methylfuran 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compound with carbon, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7791-03-9 10377-51-2, Lithium iodide 12057-17-9, Lithium manganese oxide LiMn_2O_4 12190-79-3, Cobalt lithium oxide CoLiO_2 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate

RL: DEV (Device component use); USES (Uses)
(boron compds. as anion binding agents for nonaq. **battery** electrolytes)

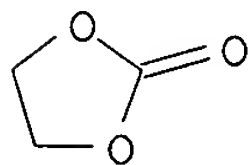
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



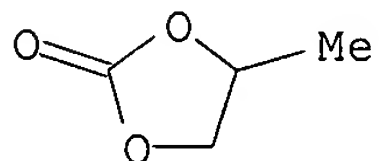
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



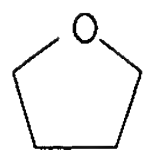
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

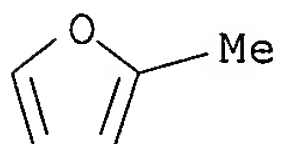


RN 109-99-9 HCAPLUS

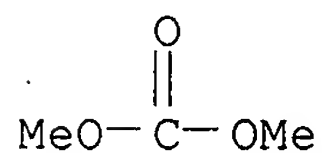
CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

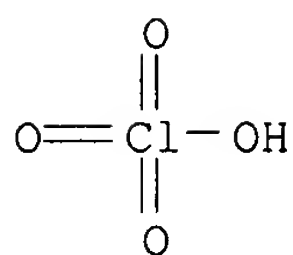
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (9CI) (CA INDEX NAME)

Br-Li

RN 7791-03-9 HCAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 10377-51-2 HCAPLUS
 CN Lithium iodide (LiI) (9CI) (CA INDEX NAME)

I-Li

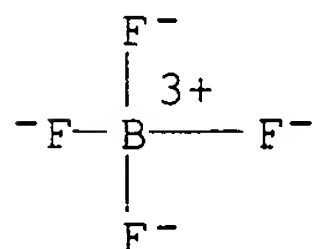
RN 12057-17-9 HCAPLUS
 CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | | |
| O | 4 | 17778-80-2 |
| Mn | 2 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

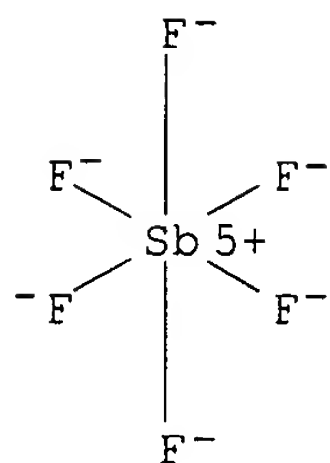
RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | | |
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

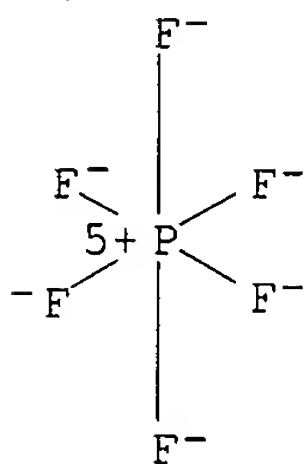
● Li⁺

RN 18424-17-4 HCAPLUS
 CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)



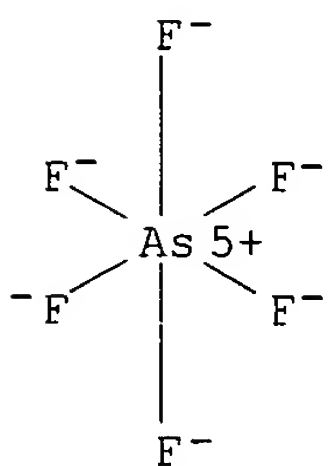
● Li⁺

RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 29935-35-1 HCAPLUS
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|

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=====+=====+=====+=====+=====+=====
Angell          |1998 |      |      |US 5849432      |HCAPLUS
Castellanos     |1995 |      |      |US 5468902      |HCAPLUS
Dejonghe        |1989 |      |      |US 4833048      |HCAPLUS
Gregory         |1988 |      |      |US 4752544      |HCAPLUS
Huang           |1994 |      |      |US 5278000      |
Johnson        |1980 |      |      |US 4201839      |HCAPLUS
Lamanna         |1996 |      |      |US 5514728      |HCAPLUS
Lee             |1996 |143   |3825  |J Electrochem Soc|HCAPLUS
Lonergan        |1995 |117   |2344  |J Am Chem Soc    |HCAPLUS
Morita          |1987 |134   |2107  |J Electrochem Soc|HCAPLUS
Salomon, J      |1990 |19    |1225  |Solution Chem    |
Schmidtchen     |1997 |97    |1609  |Chemical Reviews |HCAPLUS
Schroeder       |1960 |      |      |US 2951871      |HCAPLUS
Scrosati        |1997 |      |      |US 5645960      |
Shacklette      |1985 |      |      |US 4522901      |HCAPLUS
Siedle          |1995 |      |      |US 5416177      |HCAPLUS
Sotomura        |1997 |      |      |US 5665492      |HCAPLUS
Yang            |1994 |101   |7416  |J Chem Phys      |
Yang            |1989 |B40   |7948  |Phys Rev         |

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L188 ANSWER 28 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1999:388384 HCAPLUS

DN 131:21348

TI Battery comprising a liquid organic electrolyte with a conductive additive

IN Green, Kevin John; Wilson, James Charles; Howe, Susan Jennifer; Barnes, Philip Nicholas

PA The Secretary of State for Defence, UK

SO PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DT **Patent**

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|--------------|
| PI | WO 9930379 | A1 | 19990617 | WO 1998-GB3615 | 19981208 <-- |
| | W: CN, GB, JP, KR, US | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | GB 2346256 | A | 20000802 | GB 2000-10773 | 19981208 <-- |
| | GB 2346256 | B | 20010822 | | |
| | EP 1055262 | A1 | 20001129 | EP 1998-959000 | 19981208 <-- |
| | EP 1055262 | B1 | 20020320 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| | JP 2001526450 | T | 20011218 | JP 2000-524833 | 19981208 <-- |
| | ES 2171053 | T3 | 20020816 | ES 1998-959000 | 19981208 <-- |
| | US 6596441 | B1 | 20030722 | US 2000-530998 | 20000509 <-- |
| PRAI | GB 1997-26008 | A | 19971210 | <-- | |
| | WO 1998-GB3615 | W | 19981208 | <-- | |

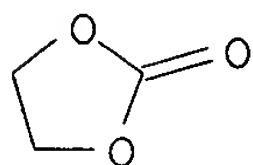
AB An electrochem. cell comprises an anode, a solid cathode and an electrolyte. The electrolyte comprises an electrochem. reactive conductive salt, an organic liquid phase comprising one or more organic compds.;

and less than 0.25M of an ionically charged additive, distinct from the electrochem. reactive conductive salt. The additive comprises a conductive salt which in use is not electrochem. reactive and which has a nitrogen containing cation in a sufficient quantity that conductivity is improved and

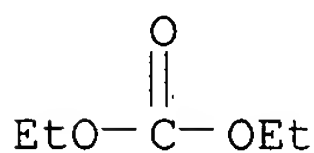
percentage material utilization of the cathode is improved at increased

discharge rates as compared with a cell using an electrolyte which does not contain the additive. An improvement of approx. 10% in conductivity is achieved for a cell according to the invention using an electrolyte with an additive.

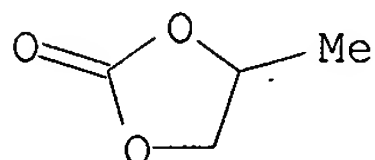
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 109-99-9, uses
616-38-6, Dimethyl carbonate 623-53-0,
Ethylmethylcarbonate
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(battery comprising liquid organic electrolyte with conductive additive)
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



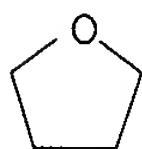
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



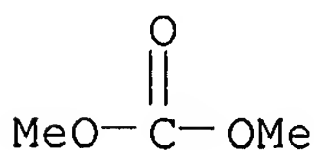
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



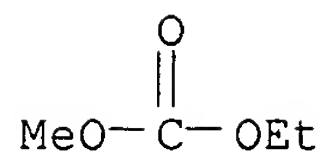
RN 109-99-9 HCAPLUS
CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



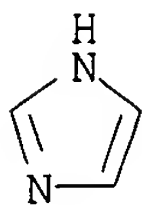
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 288-32-4D, 1H-Imidazole, tetraalkylammonium salts, uses
 7447-41-8, Lithium chloride, uses 7791-03-9,
 Lithium perchlorate 10377-52-3, Lithium
 phosphate 12676-27-6.
 RL: MOA (Modifier or additive use); USES (Uses)
 (battery comprising liquid organic electrolyte with conductive additive)
 RN 288-32-4 HCAPLUS
 CN 1H-Imidazole (9CI) (CA INDEX NAME)

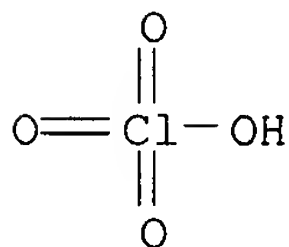


6

RN 7447-41-8 HCAPLUS
 CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

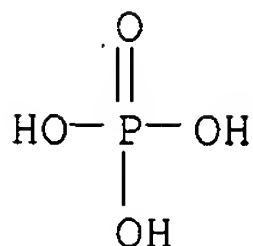
Cl-Li

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 10377-52-3 HCAPLUS
 CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12676-27-6 HCAPLUS
 CN Boric acid, lithium salt (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RETABLE

| Referenced Author (RAU) | Year (RPY) | VOL (RVL) | PG (RPG) | Referenced Work (RWK) | Referenced File |
|----------------------------|---------------|--------------|-------------|--------------------------|--------------------|
| Centre Nat Etd Spatiale | 1994 | | | FR 2704099 A | HCAPLUS |
| Fuji Photo Film Co Ltd | 1997 | | | EP 0785586 A | HCAPLUS |
| Hirai, T | 1994 | 141 | 2300 | Journal of the Elect | HCAPLUS |
| Kearney, S | 1985 | | | US 4526846 A | HCAPLUS |
| Matsushita Electric Ind | 1988 | | | JP 63301467 A | HCAPLUS |
| Soffer, A | 1979 | | | US 4132837 A | HCAPLUS |

L188 ANSWER 29 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1999:113260 HCAPLUS

DN 130:141661

TI Secondary nonaqueous electrolyte batteries

IN Sakai, Kenichi; Yamamoto, Kenji; Ueda, Naoki; Urushibara, Masaru

PA Nippon Denso Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

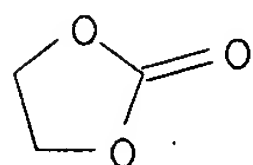
CODEN: JKXXAF

DT **Patent**

LA Japanese

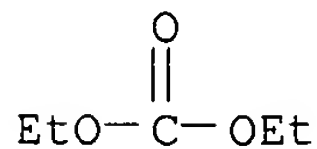
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|--------------|-----------------|--------------|
| PI | JP 11040194 | A | 19990212 | JP 1997-192239 | 19970717 <-- |
| PRAI | JP 1997-192239 | | 19970717 <-- | | |
| AB | The batteries use an electrolyte containing an optical stabilizing agent selected from naphthoquinone, fluorene, epoxides, 1,1-diphenyl-2-picrylhydrazyl compds., and hindered amines. | | | | |
| IT | 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate | | | | |
| RL | DEV (Device component use); USES (Uses) (nonaq. electrolyte solns. contg, optical stabilizing agents for secondary lithium batteries) | | | | |
| RN | 96-49-1 HCAPLUS | | | | |
| CN | 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME) | | | | |



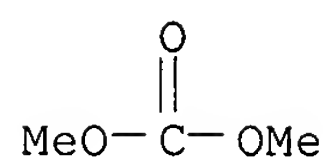
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

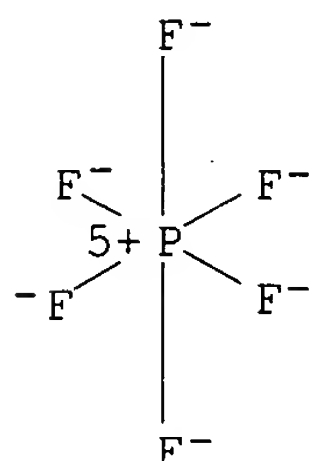


RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

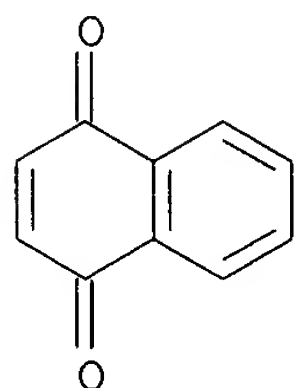


RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

IT 130-15-4, 1,4-Naphthalenedione
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte solns. contg, optical stabilizing agents for
 secondary **lithium** batteries)
 RN 130-15-4 HCAPLUS
 CN 1,4-Naphthalenedione (9CI). (CA INDEX NAME)



④

L188 ANSWER 30 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 1998:421186 HCAPLUS
 DN 129:56517
 TI Nonaqueous electrolyte batteries and secondary polymer electrolyte
 batteries
 IN Arai, Kayo; Katsumata, Toshio
 PA Toshiba Battery Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DT **Patent**
 LA Japanese
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------|------|----------|-----------------|--------------|
| PI | JP 10172615 | A | 19980626 | JP 1996-336854 | 19961217 <-- |

PRAI JP 1996-336854 19961217 <--

AB Nonaq. electrolyte batteries use cathodes, anodes, and/or separators containing a fire retardant which generates a volatile noncombustible substance at high temperature Secondary polymer electrolyte Li batteries use cathodes, anodes, and/or electrolyte retaining polymers containing a fire retardant which generates a volatile noncombustible substance at high temperature The fire retardant is preferably tetrabromo bisphenol A or mixts. of tetrabromo bisphenol A and Sb oxide.

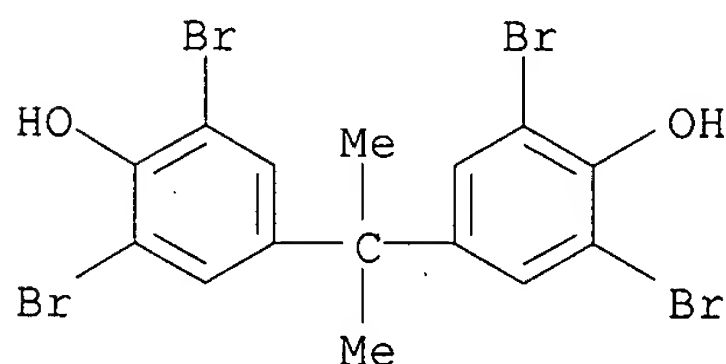
IT 79-94-7, Tetrabromo bisphenol A 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 12057-17-9, Lithium manganese oxide (LiMn2O4) 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer electrolytes in secondary lithium batteries)

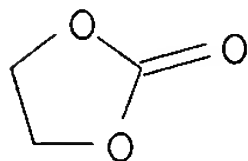
RN 79-94-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo- (9CI) (CA INDEX NAME)



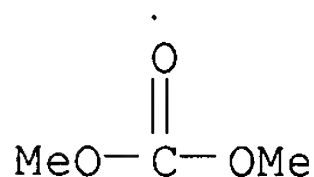
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 12057-17-9 HCAPLUS

CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

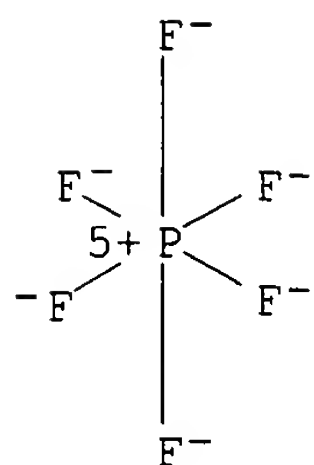
| Component | Ratio | Component |
|-----------|-------|-----------------|
| | | Registry Number |
| O | 4 | 17778-80-2 |
| Mn | 2 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

LEXIS-NEXIS
www.lexis-nexis.com

(Compound #1
is not substitutable
as in this
reference)



● Li⁺

L188 ANSWER 31 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1998:190373 HCAPLUS

DN 128:232785

TI Secondary nonaqueous electrolyte **batteries** with aromatic additives in electrolytes

IN Nishino, Hajime; Kitagawa, Masaki; Ookochi, Masaya; Takeuchi, Takashi; Koshina, Masaru

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 10079262 | A | 19980324 | JP 1996-234023 | 19960904 <-- |
| PRAI | JP 1996-234023 | | 19960904 | <-- | |

AB The **batteries** use Li containing oxide cathodes, Li intercalating carbonaceous anodes, and electrolytes containing 0.1-20 volume% heterocyclic aromatic compound having ≥1 lone electron pairs. The compound is selected from pyridine, pyrimidine, furan, thiophene, and their derivs.

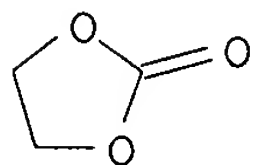
IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **21324-40-3**, **Lithium** hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolytes containing heterocyclic aromatic additives for secondary **lithium batteries**)

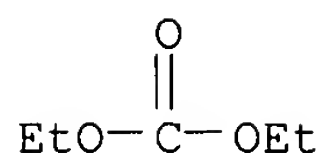
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

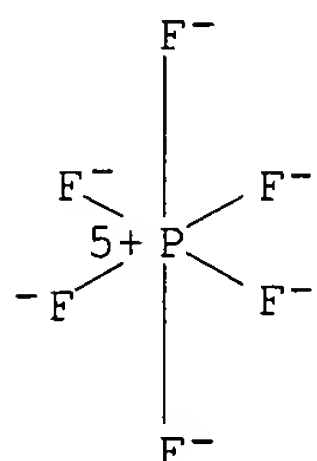


RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

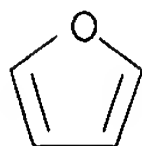


RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

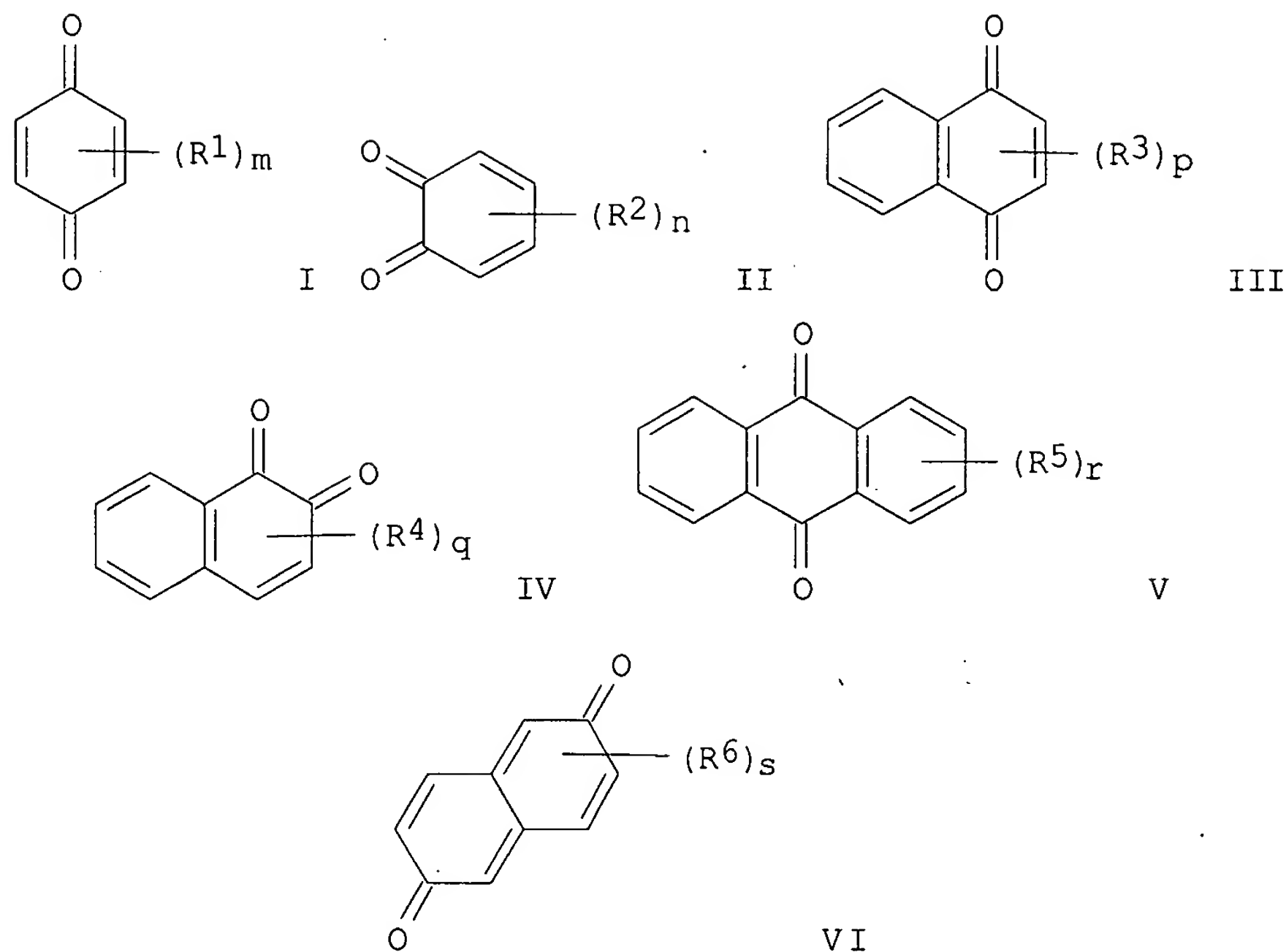
IT 110-00-9, Furan
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing heterocyclic aromatic additives for secondary
lithium batteries)
 RN 110-00-9 HCAPLUS
 CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



②

L188 ANSWER 32 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 1998:73247 HCAPLUS
 DN 128:143160
 TI Secondary **lithium** batteries using electrolyte solutions
 containing quinone additives
 IN Maejima, Toshikazu
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DT **Patent**
 LA Japanese
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|--------------|
| PI | JP 10021958 | A | 19980123 | JP 1996-175180 | 19960704 <-- |
| PRAI | JP 1996-175180 | | 19960704 | <-- | |
| OS | MARPAT 128:143160 | | | | |
| GI | | | | | |



AB The batteries use electrolyte solns. containing 0.001-0.2M quinone derivs. I-VI [m and n = 1-4, p, q, and s = 1-6, r = 1-8, R1-R6 = H, C1-4 alkyl, C6H5, F, Cl, Br, I, OH, OMe, OEt, CN, NH2, NMe2, SO3H, or COOR (R = H or C1-4 alkyl)] and/or their reduction products. The electrolyte solns may also contain 5-25% fire resistant phosphazanes. These additives improve the safety of the batteries.

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate

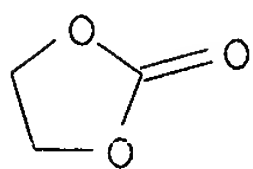
21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries using electrolyte solns. containing (hydro)quinone and phosphazene additives)

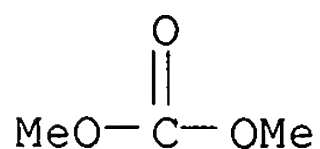
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



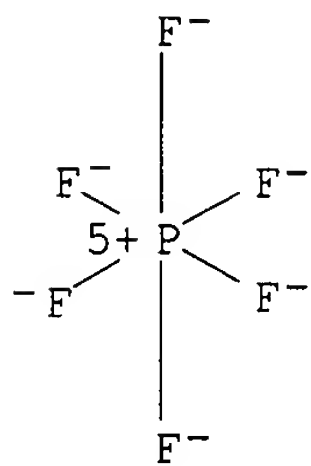
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



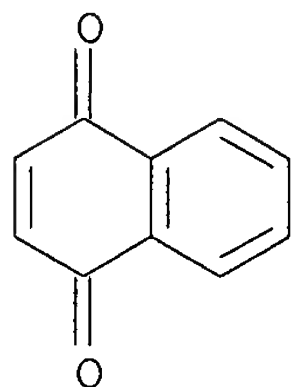
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



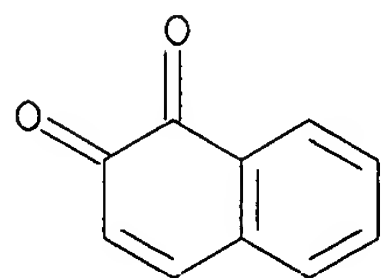
● Li⁺

IT 130-15-4, 1,4-Naphthalenedione 524-42-5,
1,2-Naphthalenedione
RL: MOA (Modifier or additive use); USES (Uses)
(secondary **lithium** batteries using electrolyte solns. containing
(hydro)quinone and phosphazene additives)
RN 130-15-4 HCAPLUS
CN 1,4-Naphthalenedione (9CI) (CA INDEX NAME)



(4)

RN 524-42-5 HCAPLUS
CN 1,2-Naphthalenedione (9CI) (CA INDEX NAME)



(5)

L188 ANSWER 33 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:273673 HCAPLUS
DN 126:253368
TI **Lithium batteries** using improved electrolytes
IN Jinno, Maruo; Uehara, Mayumi; Yanai, Atsushi; Nishio, Koji; Saito,
Toshihiko
PA Sanyo Denki Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

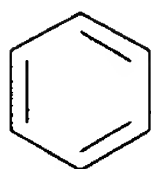
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 09045339 | A | 19970214 | JP 1995-212880 | 19950728 <-- |
| PRAI | JP 1995-212880 | | 19950728 | <-- | |

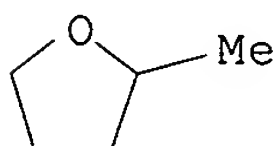
AB The **batteries** use LiCF₃SO₃ or LiPF₆ electrolyte dissolved in an ethylene carbonate based solvent mixture containing 1-20 volume% chain monoethers,
chain triethers, chain tetraethers, cyclic ethers, chain carbonate esters, lactones, 3-Pr sydnone, and/or C₆H₆. The **batteries** have low self discharge.

IT **71-43-2**, Benzene, uses **96-47-9**, 2-Methyltetrahydrofuran **96-48-0**, γ -Butyrolactone **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **109-99-9**, Tetrahydrofuran, uses **110-00-9**, Furan **534-22-5**, 2-Methylfuran **616-38-6**, Dimethyl carbonate **623-53-0**, Ethyl methyl carbonate **56525-42-9**, Methyl propyl carbonate
RL: DEV (Device component use); USES (Uses)
(comps. of ethylene carbonate based electrolyte solvent mixts. for **lithium batteries**)

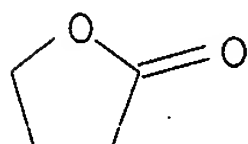
RN **71-43-2** HCAPLUS
CN Benzene (8CI, 9CI) (CA INDEX NAME)



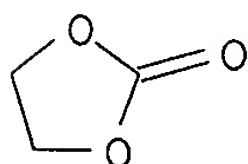
RN **96-47-9** HCAPLUS
CN Furan, tetrahydro-2-methyl- (8CI, 9CI) (CA INDEX NAME)



RN **96-48-0** HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

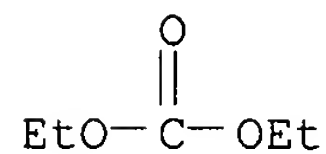


RN **96-49-1** HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



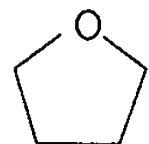
RN **105-58-8** HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



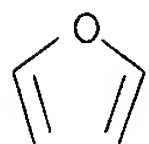
RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



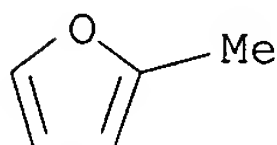
RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



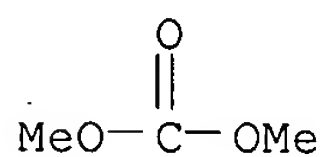
RN 534-22-5 HCAPLUS

CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



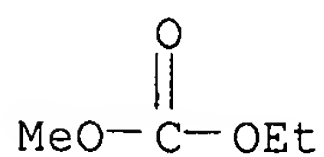
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



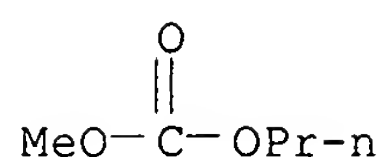
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

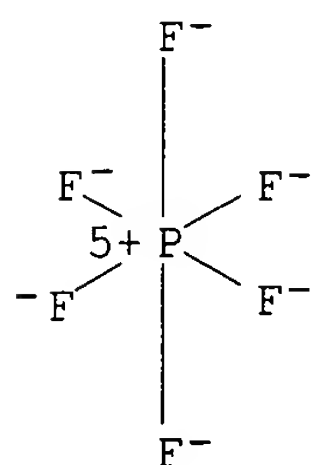


RN 56525-42-9 HCAPLUS

CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)

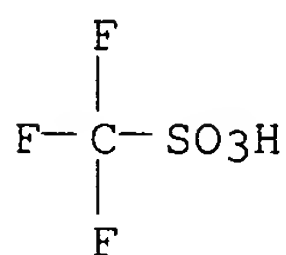


IT 21324-40-3, **Lithium** hexafluorophosphate
 33454-82-9, **Lithium** trifluoromethanesulfonate
 RL: DEV (Device component use); USES (Uses)
 (compns. of ethylene carbonate based solvent mixts. for **lithium**
 salt electrolytes in **lithium batteries**)
 RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 33454-82-9 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

L188 ANSWER 34 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 1995:869783 HCAPLUS
 DN 123:261775
 TI Nonaqueous-electrolyte **batteries** with improved electrolyte
 solutions for suppression of self discharge
 IN Suemori, Atsushi; Shoji, Yoshihiro; Nishio, Koji; Saito, Toshihiko
 PA Sanyo Electric Co; Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT **Patent**
 LA Japanese
 FAN.CNT 1
 PATENT NO. KIND DATE APPLICATION NO. DATE

jan delaval - 22 january 2007

PI JP 07192756 A 19950728 JP 1993-327899 19931224 <--
 PRAI JP 1993-327899 19931224 <--

AB The **batteries** consist of cathodes and Li anodes and electrolytes containing LiPF₆, LiClO₄, LiCF₃SO₃, LiBF₄, LiAsF₆, and/or LiN(CF₃SO₂)₂ and solvents containing ethylene carbonate, propylene carbonate, butylene carbonate, vinylene carbonate, 1,2-dimethoxyethane, di-Me carbonate, di-Et carbonate, Et Me carbonate, THF, and/or 1,3-dioxolane, where the electrolyte solns. are added with furan resins. The furan resins may be phenol-furfural resins, furfural-acetone resins, furfuryl alc. resins, and/or their derivs. The **batteries** suppress self discharge and have good storage stability.

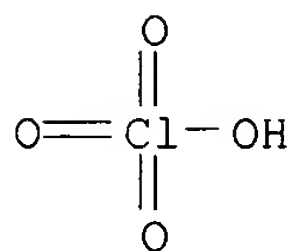
IT **7439-93-2, Lithium**, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; nonaq. electrolyte solns. containing furan resins for Li **batteries** for suppressing self discharge)

RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

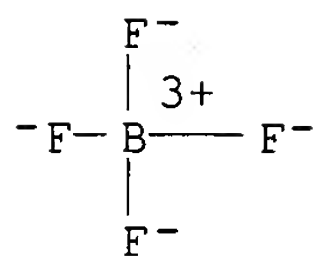
IT **7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide**
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; nonaq. electrolyte solns. containing furan resins for Li **batteries** for suppressing self discharge)

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



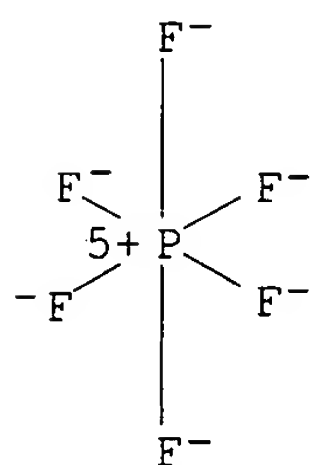
● Li

RN 14283-07-9 HCAPLUS
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li^+

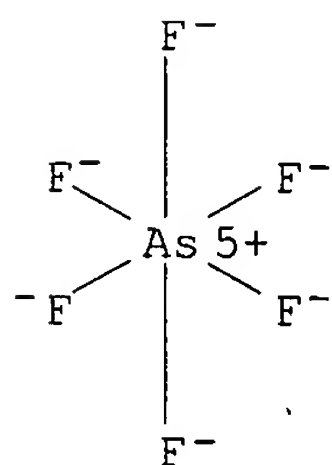
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li^+

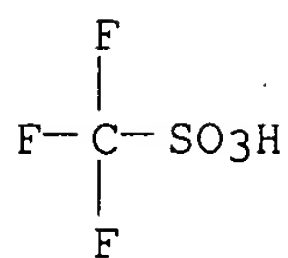
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li^+

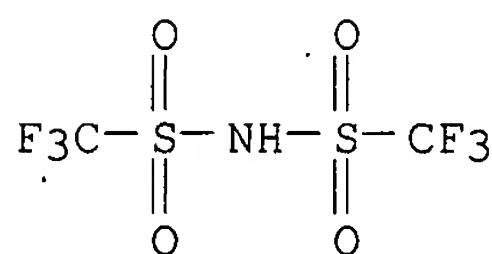
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)

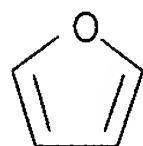
● Li

IT 110-00-9D, Furan, derivs., polymers

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)(nonaq. electrolyte solns. containing furan resins for Li
batteries for suppressing self discharge)

RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



(2)

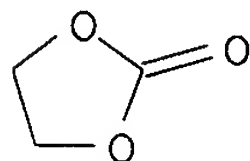
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran,
uses 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
methyl carbonate 4437-85-8, Butylene carbonate

RL: DEV (Device component use); USES (Uses)

(solvent; nonaq. electrolyte solns. containing furan resins for Li
batteries for suppressing self discharge)

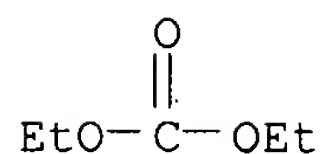
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

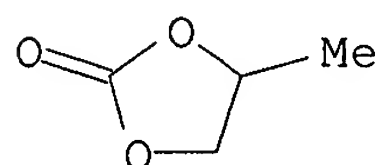


RN 105-58-8 HCAPLUS

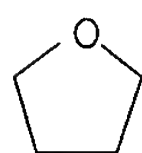
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



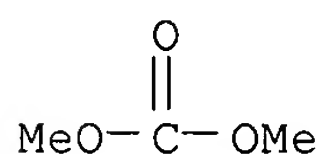
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



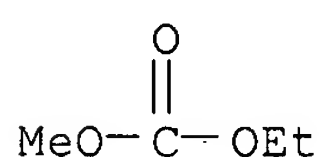
RN 109-99-9 HCAPLUS
CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



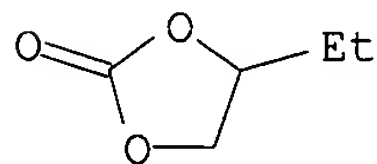
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



L188 ANSWER 35 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1994:195934 HCAPLUS
DN 120:195934
TI Dispersion alloy anodes for **batteries**
IN Yamauchi, Goro; Laman, Fred; Moriya, Kunio
PA Advanced Energy Technologies Inc., Can.
SO U.S., 9 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

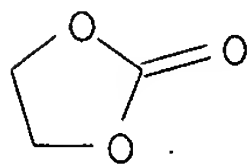
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | US 5278005 | A | 19940111 | US 1992-864266 | 19920406 <-- |
| PRAI | US 1992-864266 | | 19920406 | <-- | |

AB The anode material comprises a fine and uniform dispersion of second phase particles in **lithium**. The particles have an average particle size of 0.5-40 μ M and are present at a concentration of 0.1-10 atomic%. The anode material exhibits a reduction in dendrite and mossy **Li** formation, while maintaining the necessary mech. properties of the material for easy working. The new anode demonstrates excellent cell performance and thermal stability.

IT **96-49-1**, 1,3-Dioxolan-2-one **108-32-7**, Propylene carbonate **110-00-9**, Furan **29935-35-1**, Arsenic **lithium** fluoride (aslif6)
 RL: DEV (Device component use); USES (Uses)
 (electrolyte, in **batteries** with **lithium** dispersion alloy anodes)

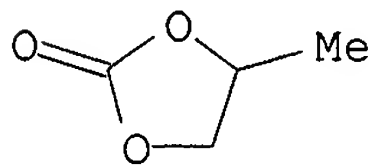
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



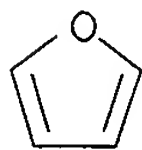
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS

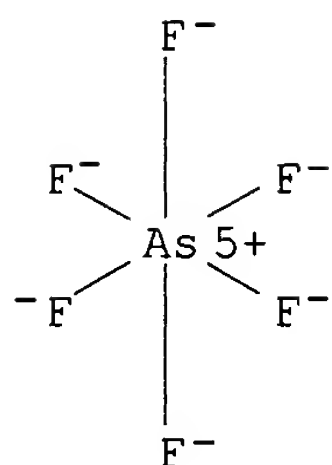
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 29935-35-1 HCAPLUS

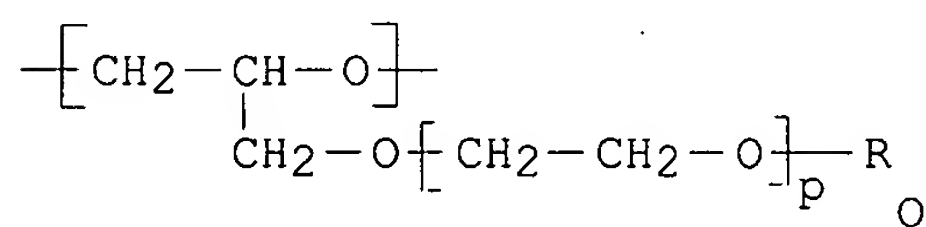
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

(2)

 $\bullet \text{Li}^+$

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|--------------|
| | ----- | --- | ----- | ----- | ----- |
| PI | JP 05202281 | A | 19930810 | JP 1992-34368 | 19920124 <-- |
| | JP 3149247 | B2 | 20010326 | | |
| | US 6019908 | A | 20000201 | US 1992-998021 | 19921229 <-- |
| PRAI | JP 1992-34368 | A | 19920124 | <-- | |
| GI | | | | | |



AB The title electrolytes comprise organic polymers described by the general
formula $Z[(E)_m(A)_nY]_k$ (I; Z = active H-containing compound residue; Y = active
H

group, polymerizable reactive functional group; k = 1-12; E = Q; p = 0-25; R = C1-20 alkyl, alkenyl, aryl, alkylaryl; A = CH₂CH₂O; m = 1-220; n = 1-240; m + n ≥ 4; E and A are linked randomly) with average mol. weight 500-50,000 crosslinked either by the reaction of active H-terminated compds. with crosslinkers or by polymerization of functional group-terminated compds., soluble electrolyte salts, and ≥ 1 organic solvent selected from THF, 2-methyltetrahydrofuran, 1,3-dioxolane, 4,4-dimethyl-1,3-dioxolane, γ-butyrolactone, ethylene carbonate, sulfolane, 3-methylsulfone (sic), tert-Bu ether, iso-Bu ether, 1,2-dimethoxyethane, 1,2-ethoxymethoxyethane, and ethylene glycol di-Et ether. Thus, 18 g glycerin was treated with a mixture of 730 g diethylene glycol glycidyl Me ether and 182 g ethylene oxide in the presence of KOH to give 876 g

polyether with mol. weight 4700, which was esterified with 1.1 equivalent acrylic

acid to give acrylate-terminated polyether with mol. weight 4862. A solution containing the polyether 3.6, propylene carbonate 3.6, LiClO₄ 0.4, and 1-hydroxycyclohexyl Ph ketone 0.04 g was cast on a glass plate and UV-irradiated to give a 100 μm-thick polymer electrolyte which showed ionic conductivity 9.2 + 10⁻⁴ S/cm at 20°, 5.1 + 10⁻⁴ S/cm at 0°, and 2.5 + 10⁻⁴ S/cm at -20°.

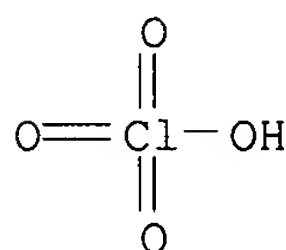
IT 7791-03-9, **Lithium** perchlorate

RL: USES (Uses)

(crosslinked polyethers containing organic solvents and, for electrolytes, ionic conductive, stable at low temps.)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 14283-07-9, **Lithium** tetrafluoroborate 33454-82-9

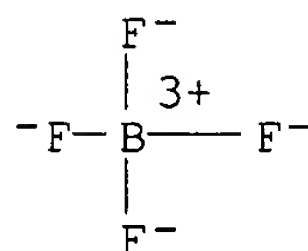
, Trifluoromethanesulfonic acid **lithium** salt

RL: USES (Uses)

(electrolytes from crosslinked polyethers containing organic solvents and, ionic conductive, stable at low temps.)

RN 14283-07-9 HCAPLUS

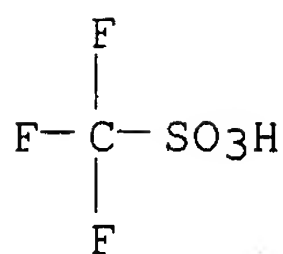
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

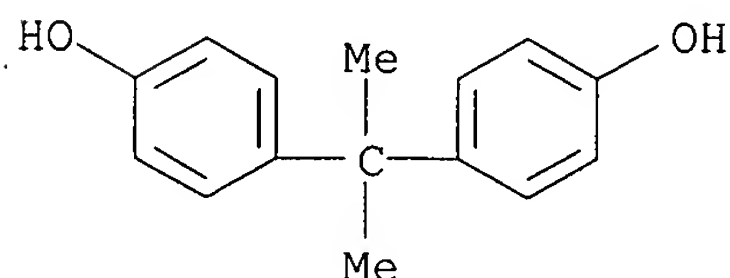
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)

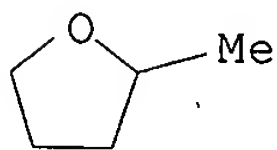


● Li

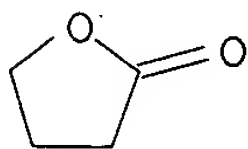
IT 80-05-7DP, Bisphenol A, reaction products with polyoxyethylene glycidyl Me ether and ethylene oxide, p-vinylbenzoates, polymers
 RL: PREP (Preparation)
 (preparation of, crosslinked, for electrolytes, containing **lithium** trifluoromethanesulfonate and organic solvents, ionic conductive, stable at low temps.)
 RN 80-05-7 HCAPLUS
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



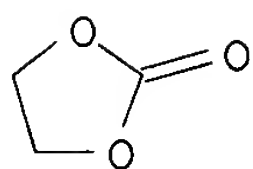
IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,
 γ -Butyrolactone 96-49-1, Ethylene carbonate
 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran,
 uses 126-33-0, Sulfolane 4437-85-8, Butylene carbonate
 RL: USES (Uses)
 (solvent, for ionic conductive polymer electrolytes)
 RN 96-47-9 HCAPLUS
 CN Furan, tetrahydro-2-methyl- (8CI, 9CI) (CA INDEX NAME)



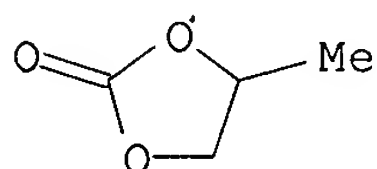
RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



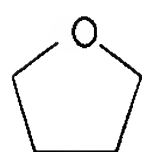
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



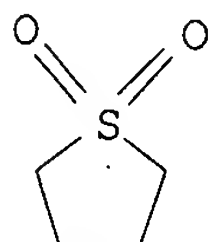
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



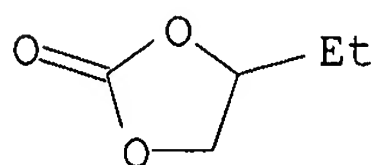
RN 109-99-9 HCAPLUS
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 126-33-0 HCAPLUS
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



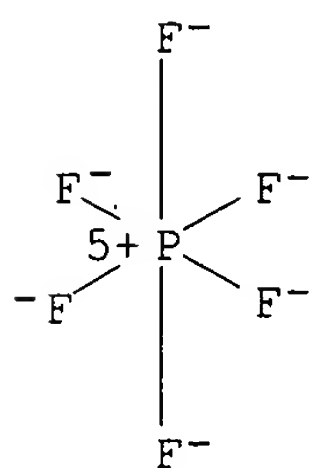
RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



L188 ANSWER 37 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 1994:58562 HCAPLUS
 DN 120:58562
 TI Nonaqueous-electrolyte **lithium** batteries with storage stability
 and charge-discharge efficiency
 IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshita, Ryuji;
 Furukawa, Sanehiro
 PA Sanyo Electric Co, Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DT **Patent**
 LA Japanese
 FAN.CNT 1

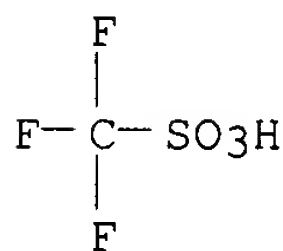
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

PI JP 05258753 A 19931008 JP 1991-287933 19911101 <--
 JP 3086510 B2 20000911
 PRAI JP 1991-287933 19911101 <--
 AB The batteries comprise metal oxide cathodes, **Li** or **Li**
 -intercalatable anodes, separators, and F-containing **lithium** salt
 electrolyte dissolved in nonaq. solvents containing ethylene carbonate and S-
 and/or N-containing heterocyclic compds., preferably thiazole, thiazoline,
 thiazolizine, thiophene, and/or their derivs.
 IT **21324-40-3 33454-82-9**
 RL: USES (Uses)
 (electrolytes, solvents containing ethylene carbonate and sulfur- and/or
 nitrogen-containing heterocyclic compds. for)
 RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



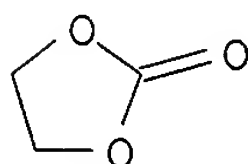
● Li⁺

RN 33454-82-9 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

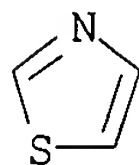
IT **96-49-1**, Ethylene carbonate **288-47-1**, Thiazole
 RL: USES (Uses)
 (solvents containing, for electrolytes in **lithium** batteries)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 288-47-1 HCAPLUS

CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)

(6)



L188 ANSWER 38 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1993:452959 HCAPLUS

DN 119:52959

TI Nonaqueous-electrolyte **lithium battery**

IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshita, Ryuji; Furukawa, Sanehiro

PA Sanyo Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | JP 05074486 | A | 19930326 | JP 1991-230090 | 19910910 <-- |
| | JP 3066126 | B2 | 20000717 | | |
| PRAI | JP 1991-230090 | | 19910910 | <-- | |

AB The **batteries** use a mixture containing a main solvent and a 2nd solvent, having similar structure to the main solvent but having unsatd. bond, for their electrolyte. A mixture of ethylene carbonate, butylene carbonate, and MeOC₂H₄OMe containing vinylene carbonate was used in example.

IT **110-00-9, Furan**

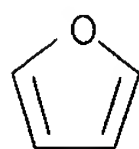
RL: USES (Uses)

(electrolyte solvent mixts. containing, for **lithium batteries**)

RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

(2)



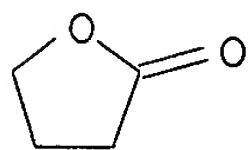
IT **96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 4437-85-8, Butylene carbonate**

RL: USES (Uses)

(electrolyte solvent mixts. containing, vinyl carbonate in, for **lithium batteries**)

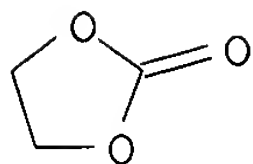
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

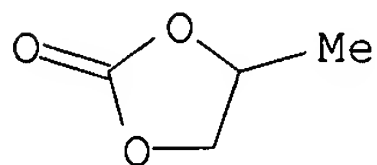


RN 96-49-1 HCAPLUS

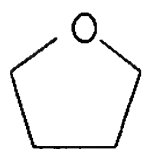
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



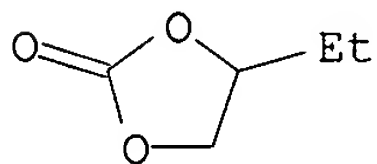
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



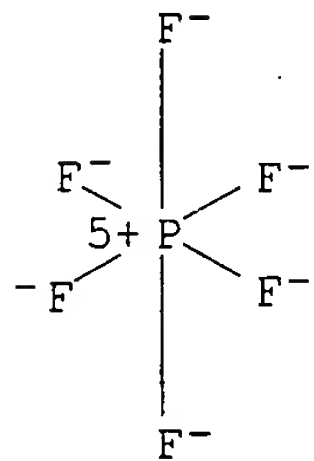
RN 109-99-9 HCAPLUS
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



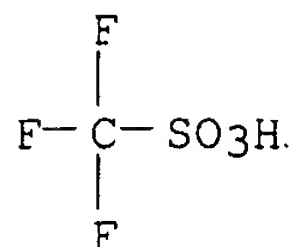
IT 21324-40-3 33454-82-9, Trifluoromethanesulfonic acid
 lithium salt
 RL: USES (Uses)
 (electrolyte, solvent mixts. for, in **lithium**
batteries)
 RN 21324-40-3 HCAPLUS
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

L188 ANSWER 39 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1992:637171 HCAPLUS

DN 117:237171

TI Secondary **lithium batteries**

IN Sugeno, Naoyuki; Anzai, Masanori; Nagaura, Toru

PA Sony Corp., Japan

SO Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DT **Patent**

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | EP 486950 | A1 | 19920527 | EP 1991-119471 | 19911114 <-- |
| | EP 486950 | B1 | 19940810 | | |
| | R: DE, FR, GB | | | | |
| | JP 04184872 | A | 19920701 | JP 1990-312481 | 19901117 <-- |
| | JP 3089662 | B2 | 20000918 | | |
| | JP 2000268864 | A | 20000929 | JP 2000-65779 | 19901117 <-- |
| | JP 3356157 | B2 | 20021209 | | |
| | JP 04280082 | A | 19921006 | JP 1991-67998 | 19910307 <-- |
| | JP 3079613 | B2 | 20000821 | | |
| | CA 2055305 | A1 | 19920518 | CA 1991-2055305 | 19911112 <-- |
| | CA 2055305 | C | 20020219 | | |
| | US 5292601 | A | 19940308 | US 1991-792628 | 19911115 <-- |
| PRAI | JP 1990-312481 | A | 19901117 | <-- | |
| | JP 1991-67998 | A | 19910307 | <-- | |

AB The **batteries** have Li-intercalatable carbonaceous anodes, Li_xMO_2 cathodes ($x = 0.5-1$, $M = \text{Co}$, Ni , and/or Mn), and electrolyte containing a mixed solvent of 15-75 volume% propylene carbonate and di-Et and/or di-Pr carbonate. The carbonaceous material is obtained from furan resins and petroleum pitches and has a spacing of (002) planes of $\geq 3.70 \text{ \AA}$ and any DTA exothermic peak at $\geq 700^\circ$. The carbonaceous material further comprises 0.2-5.0 weight% P and 0.2-2.0 weight% B.

IT **110-00-9D**, Furan, derivs., polymers

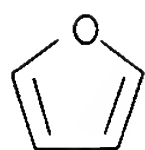
RL: USES (Uses)

(carbonaceous materials from, for **lithium**-intercalating anodes, in **batteries**)

RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

(2)



IT 7439-93-2, **Lithium**, uses
 RL: USES (Uses)
 (carbonaceous materials intercalated with, anodes, for
batteries)
 RN 7439-93-2 HCAPLUS
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

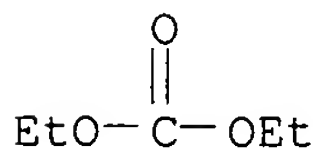
IT 12057-17-9, **Lithium** manganese oxide (LiMn2O4)
 12190-79-3, Cobalt **lithium** oxide (CoLiO2)
 RL: DEV (Device component use); USES (Uses)
 (cathodes, for secondary **lithium batteries**)
 RN 12057-17-9 HCAPLUS
 CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 4 | 17778-80-2 |
| Mn | 2 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

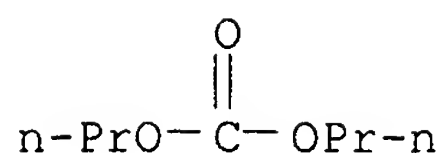
RN 12190-79-3 HCAPLUS
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 2 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Li | 1 | 7439-93-2 |

IT 105-58-8, Diethyl carbonate 623-96-1, Dipropyl carbonate
 RL: USES (Uses)
 (electrolyte solvent containing, propylene carbonate, for **lithium
 batteries**)
 RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



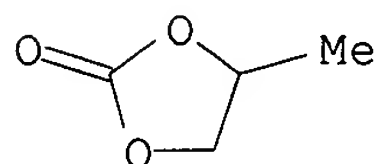
IT 108-32-7, Propylene carbonate

RL: USES (Uses)

(electrolyte solvent, containing di-Et and/or di-Pr carbonate
lithium batteries)

RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



L188 ANSWER 40 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1992:491879 HCAPLUS

DN 117:91879

TI Functionalized polyether-type ion-conducting polymer electrolytes

IN Motogami, Kenji; Mori, Shigeo

PA Daiichi Kogyo Seiyaku K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|--------------|-----------------|--------------|
| PI | JP 04068064 | A | 19920303 | JP 1990-180355 | 19900706 <-- |
| | JP 2923542 | B2 | 19990726 | | |
| PRAI | JP 1990-180355 | | 19900706 <-- | | |
| AB | The title polyethers, being used with soluble electrolyte salts and O- and/or N-containing organic solvents, have low glass-transition temperature (T _g), and are | | | | |

amorphous polymers obtained by the crosslinking of the active H-containing compound-initiated block or random addition products of glycidyl ethers and C_≥3 alkylene oxides which bear terminal functional groups. The amorphous nature of the polymers can prevent the sudden decrease of conductivity

at low temperature as seen in crystalline similar polymers. Thus, the KOH-catalyzed

reaction of glycerol initiator 15 with 1,2-epoxybutane 370, then with glycidyl triethylene glycol Me ether 285 g gave a polyether which was esterified with acrylic acid (I) at the OH/I equivalent weight ratio 1.1:1. Heating 3.6 g the acrylate polyether-polyol with 0.12 g LiClO₄ and a MEK solution of photoinitiator under N at 80° for 1 h and in vacuo for 8 h to remove MEK, and impregnating into 1.8 g propylene carbonate gave a title product which showed ion conductivity 1.8x10⁻⁴, 1.0x10⁻⁴, and 5.2x10⁻⁵ s/cm

at 20, 0 and -20°, resp.

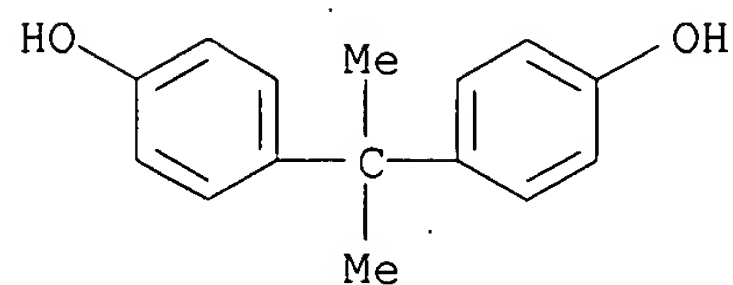
IT 80-05-7D, ether with mixed oxirane compds., polymers, polymer with polyisocyanates, lithium complexes 7439-93-2D, Lithium, polyether-polyol-based polymer complexes

RL: USES (Uses)

(electrolytes, preparation of ion-conducting and amorphous)

RN 80-05-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

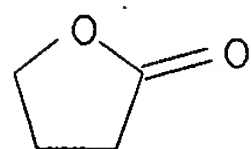
IT 96-48-0 108-32-7, Propylene carbonate

RL: USES (Uses)

(solvents, for amorphous polypolyoxyalkylene-polyol-based acrylic polymers or urethane polymer **lithium** complexes)

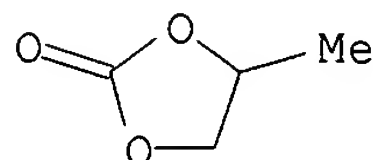
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



L188 ANSWER 41 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1991:563107 HCAPLUS

DN 115:163107

TI Mixed-solvent electrolytes for ambient-temperature secondary

lithium batteries

IN Shen, David H.; Surampudi, Subbarao; Deligiannis, Fotios; Halpert, Gerald

PA California Institute of Technology, USA

SO U.S., 11 pp.

CODEN: USXXAM

DT **Patent**

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|--------------|-----------------|--------------|
| PI | US 5030528 | A | 19910709 | US 1990-520265 | 19900507 <-- |
| PRAI | US 1990-520265 | | 19900507 <-- | | |
| AB | The electrolytes comprise a solvent of a mixture of ethylene carbonate .apprx.5-30 volume%, EPDM rubber .apprx.0.01-0.1 weight%, 2-methylfuran .apprx.0.2-2 volume%, and balance 2-methyltetrahydrofuran and a conductive | | | | |